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GRADE 5

UNIT THREE Lessons 23 - 33

ALBERTA DISTANCE
LEARNING CENTRE

Alberta
EDUCATION


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Science 5

Unit 3

LESSONS 23-33

Distance Learning

Alberta EDUCATION

Science 5
Student Module
Unit 3
Lessons 23-33
Alberta Distance Learning Centre
ISBN No. 0-7741-0919-X

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A LESSON RECORD FORM MUST BE COMPLETED FOR EVERY LESSON SUBMITTED FOR CORRECTION, AS ILLUSTRATED BELOW

A Lesson Record form with the **correct** label attached **must** be enclosed with **every lesson** submitted for correction, as illustrated below.

Correct use of these labels will ensure prompt processing and grading of your lessons.

The enclosed **Lesson Labels** must be checked for spelling and address details.

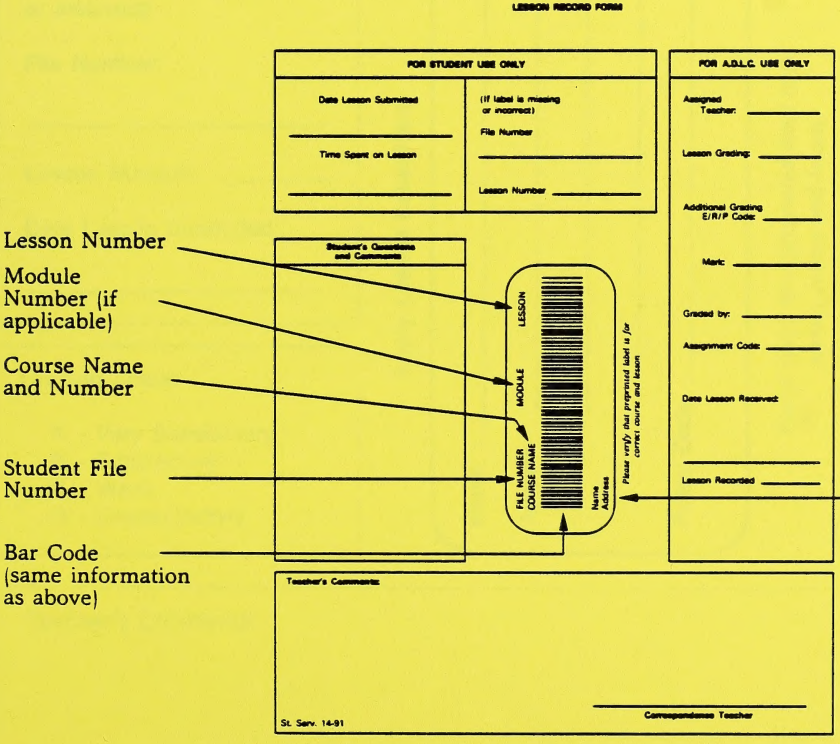
Please advise the Alberta Distance Learning Centre promptly of any changes in name, address, school, or any other details and we will issue a revised set of labels. Your file number is permanently assigned and **must** be included on all correspondence with the Alberta Distance Learning Centre. If the proper label and Lesson Record Form is not attached to each lesson as indicated it will delay your lessons being processed and credited to you.

Lesson labels are to be attached to the **lesson record forms** in the space provided for student name and address.

Check carefully to ensure that the **subject name, module number** and **lesson number** on each label corresponds exactly with the lesson you are submitting.

Labels are to be **peeled** off waxed backing paper and **stuck** on the lesson record form.

Only **one** label is to be placed on each lesson.



When revised labels are received, place the correct new labels on your Lesson Record Forms.

DO NOT MARK OR COVER BAR CODING.

CHANGE OF ADDRESS

If the address on your lesson record form differs from the address you supplied on your registration application, please explain. Indicate whether the different address is your home, school, temporary or permanent change of address.

LESSON RECORD FORM

0504 Science

Unit III

Parent's or Supervisor's Comments:

_____

Signature

For School Use Only

Assigned Teacher: _____

Assignment Code: _____

Graded by: _____

Lesson Grading

Science: _____

Health: _____

Neatness: _____

Date Lesson Received:

_____

Lesson Recorded: _____

For Student Use

(If label is missing or incorrect)

File Number:

_____

Lesson Number: _____

Date Lesson Submitted:

_____

Grading Scale:

A - Very Satisfactory
B - Satisfactory
C - Weak
D - Unsatisfactory

Apply Lesson Label Here

Name

Address

Postal Code

Please verify that preprinted label is for correct course and lesson.

Teacher's Comments:

_____

Signature

Keep this sheet when returned - it is your report.

ALBERTA DISTANCE LEARNING CENTRE

MAILING INSTRUCTIONS FOR CORRESPONDENCE LESSONS

1. BEFORE MAILING YOUR LESSONS, PLEASE SEE THAT:

(1) All pages are numbered and in order, and no paper clips or staples are used.
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(3) Your work has been re-read to ensure accuracy in spelling and lesson details.
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St. Serv. 9-91

FIRST DAY

Health

Last week you learned about the muscles in your body. You also learned about your bones and your respiratory system.

All the muscles in your body
belong to the muscular system.

All the bones in your body
belong to the skeletal system.

All the breathing parts belong
to the respiratory system.

These are three different and important systems. They all have a job to do in our bodies. However, none of these systems can work without the others. Each depends on the other. This is called INTERDEPENDENCE (in tər dē pend əns).

In a few paragraphs explain how these systems depend upon each other. The questions below will serve as guides in writing your paragraphs.

1. If you didn't have bones what would happen to your muscles?

2. If you didn't have muscles how would this affect your bones?

3. Without bones and muscles you couldn't breathe - why?

_____

_____

_____

_____

_____

_____

Without your breathing system, there is no need for bones or muscles. Without the breathing system you could not live.

SEND FOR CORRECTION

SECOND DAY

Health

In the last few lessons, you found that without your bones, your body would be like a mass of jelly. Without muscles, it would be impossible for you to move your bones.

How might your life be different if you had no teeth?

_____

_____

_____

_____

_____

_____

_____

_____

Your teeth affect:

1. the food you eat. Without teeth much of your food would have to be liquid or jelly-like.

2. how you speak. Say *father* or *think*. Feel the part your teeth play in saying the *f* and *th* sounds.

3. your appearance. Imagine yourself without teeth!

Perhaps you have heard the expression — teeth as hard as nails —. Of course no one has teeth that hard. However, the top covering of your teeth is made of the hardest substance in your body. This substance is called ENAMEL (i nam əl). See the diagram on the next page.

Just under the enamel is a layer called the DENTINE (den tēn). Under the dentine lies a layer called the PULP. The pulp contains the blood vessels and nerves. Find the dentine and pulp on the diagram.

What purpose do you think the blood vessels and nerves serve to the teeth?

_____

_____

_____

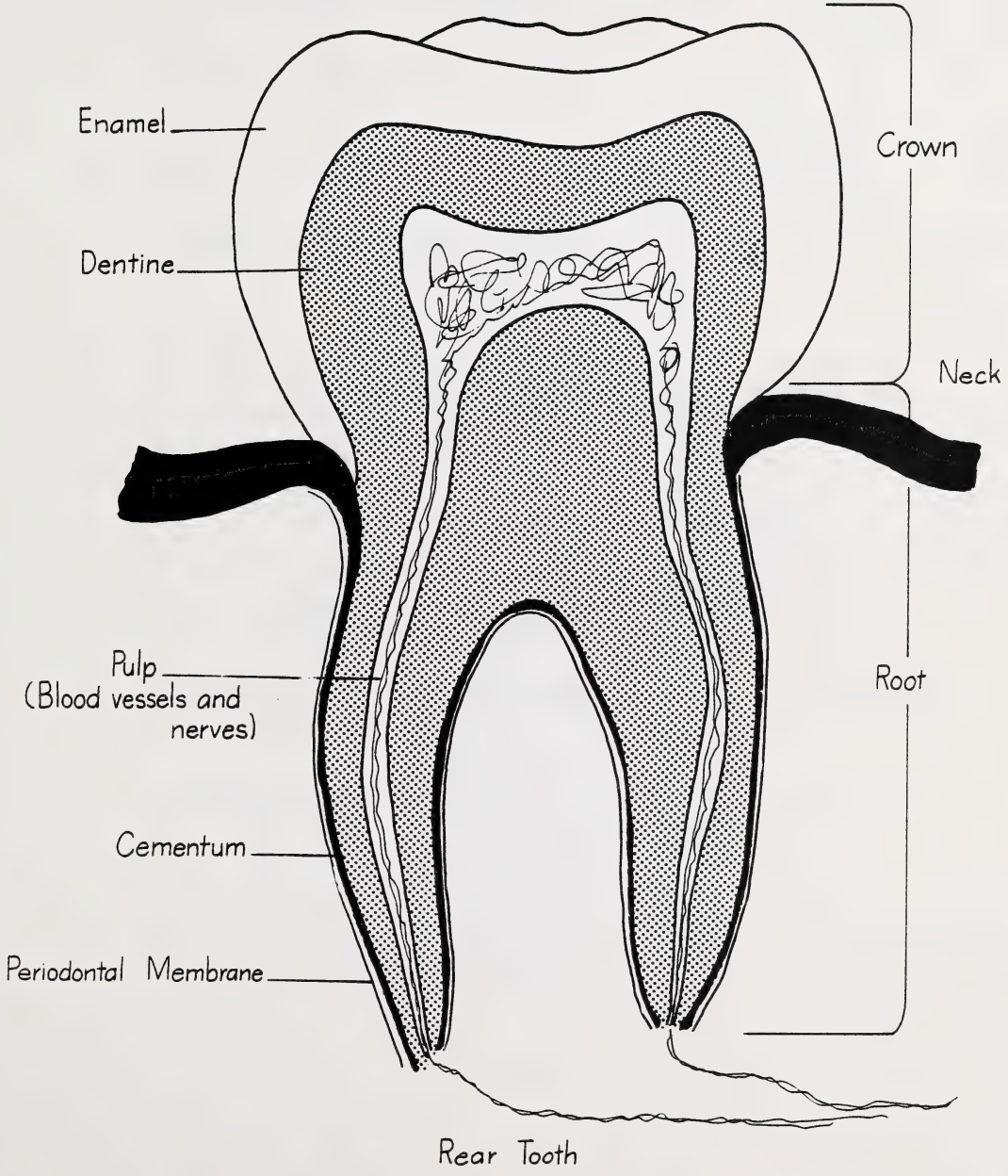
_____

_____

_____

The blood in the blood vessels brings food to the teeth.

The nerve endings in the pulp send feelings of pain and other sensations to the brain.


Enamel
Dentine
Pulp
(Blood vessels and nerves)
Cementum
Periodontal Membrane
Crown
Neck
Root
Rear Tooth

On the diagram on page 5 you will notice that the tooth has three divisions.

1. The top part is called the CROWN. It is the white part above the gums. The crown is made of _____ and part of the _____.

2. The second division is called the NECK. The neck consists of part of the _____ and _____.

3. The ROOT lies entirely below the gums. The root has an outer covering called the CEMENTUM (sə ment əm). This covering is hard although not as hard as enamel. The cementum has two jobs.

    1. It protects the inner parts of the root.
    2. It holds the tooth to a firm membrane inside the gums called the PERIODONTAL (per iə don təl) MEMBRANE.

Why do you think that we usually can bite, tear and chew food without pain?

_____

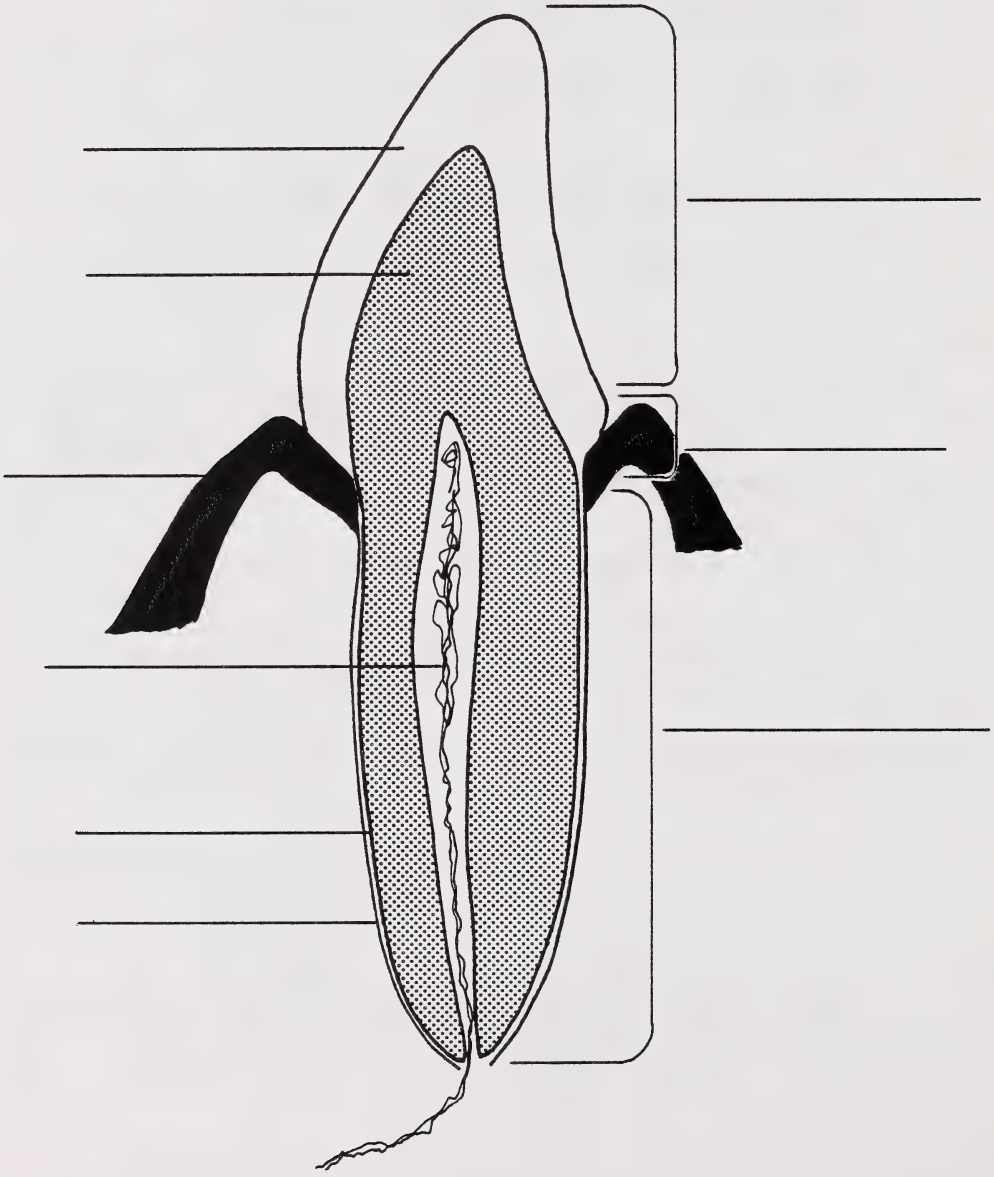
_____

_____

_____

_____

Without looking back, see if you can fill in the blanks that point to the various parts of the tooth.



THIRD DAY

Health

Last day you read about the different parts of a tooth. The main use of your teeth is for eating. However, there are different kinds of teeth for different kinds of eating.

Cats and dogs have very sharp teeth for fighting and *ripping* their food apart. Some animals such as the horse and cow have broad flat teeth which are good for *grinding* grasses and grains.

Look in a mirror. Open your mouth wide. How many different types of teeth can you see in your mouth?

_____

Humans have FOUR different kinds of teeth for four kinds of eating.

1. TEETH FOR CUTTING - When you first bite into an apple which teeth do you usually use? _____

   You likely use the upper and lower front teeth. These teeth which you use in cutting a larger object into bite-size pieces are called INCISORS (in sī zərz).

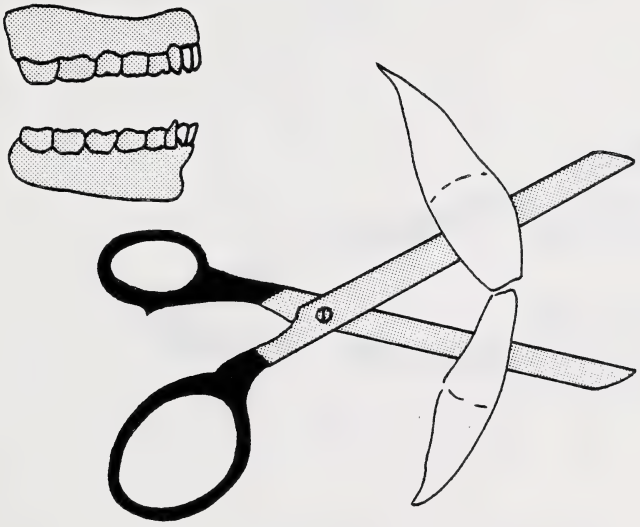
2. TEETH FOR TEARING - Perhaps you have had to tear a thick piece of steak before you could chew it further. The teeth used to do this tearing action are the CUSPIDS (kus pidz). The cuspids are the sharp-pointed teeth next to the incisors.

3. TEETH FOR TEARING AND CRUSHING - Similar to the cuspids are the BICUSPIDS (bī kus pidz). They are used for tearing and crushing food. With your tongue feel the bicuspids. Do you feel the two points? _____ These are called CUSPS.

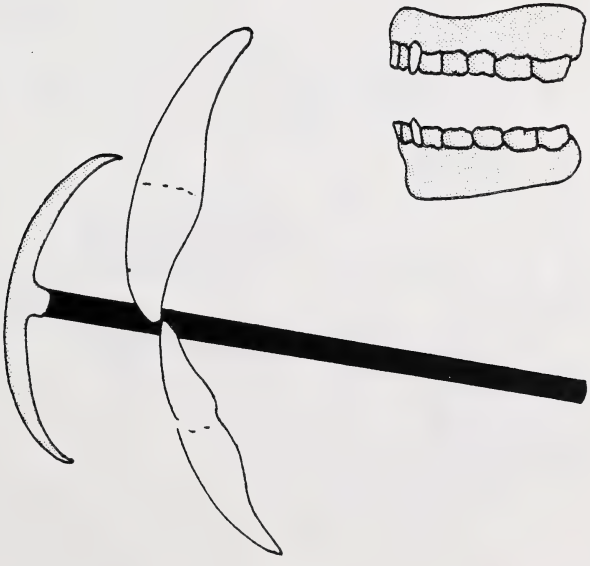
4. TEETH FOR GRINDING - Imagine that you are chewing a piece of steak. Do you chew it in the front or back of your mouth? _____

   The strong, heavy teeth needed for this job are at the back of your mouth. They are called MOLARS (mō lərz) or grinders.

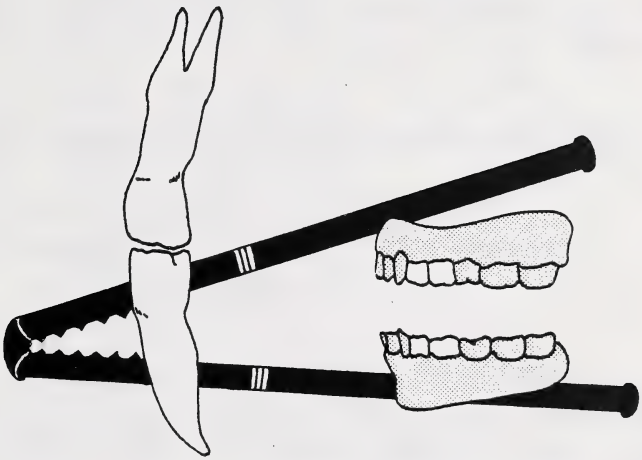
INCISORS



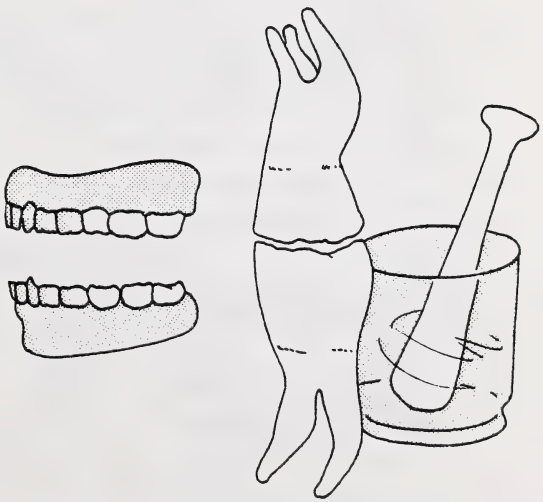
CUSPIDS



BICUSPS



MOLARS



How many teeth do you have now? Count them!

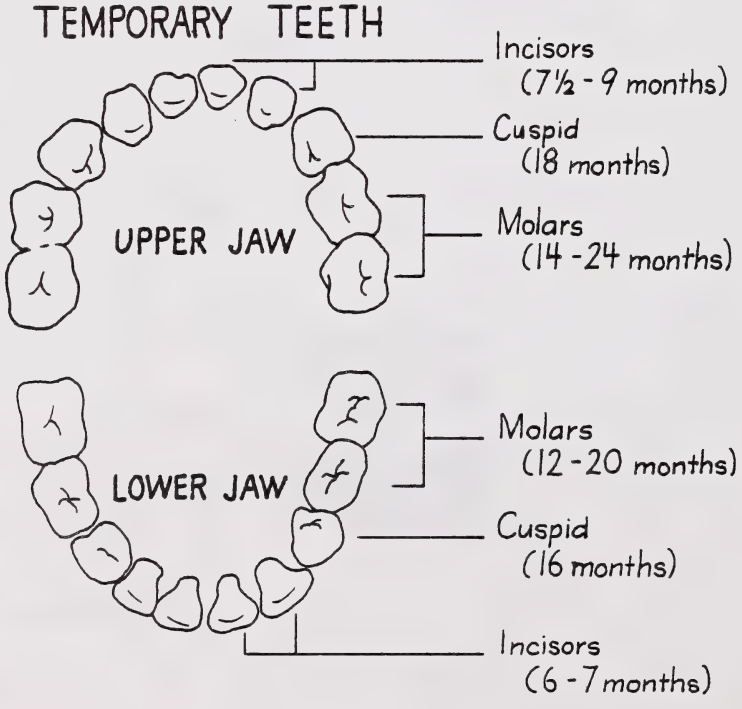
_____

Each person grows two sets of teeth in a lifetime. Right now you probably have teeth from the first and the second set of teeth.

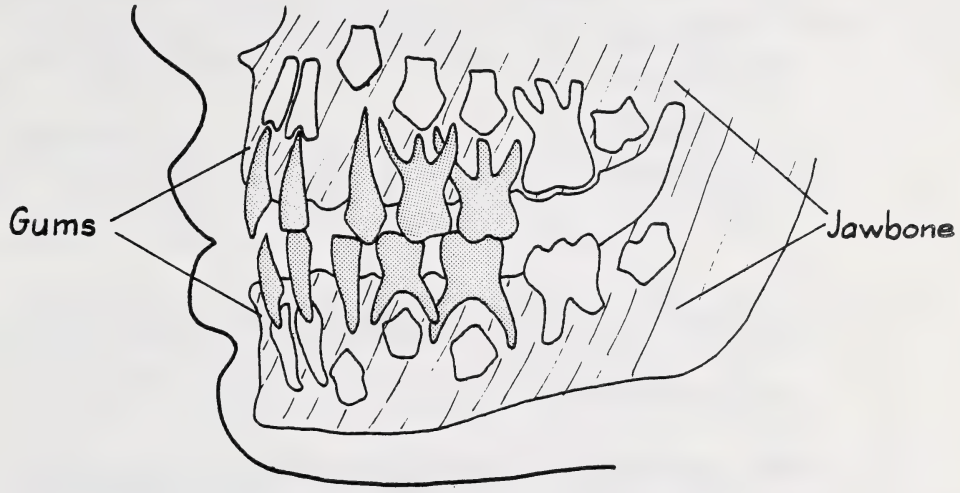
The first set of teeth has many different names:

- baby teeth
- primary teeth
- milk teeth
- temporary teeth
- deciduous teeth

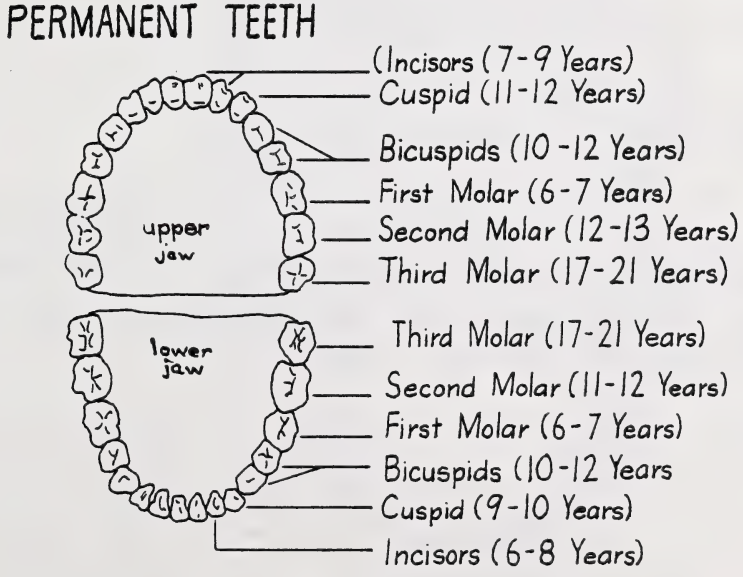
The first set of teeth consists of twenty teeth. These baby teeth start to show about the age of six months. By the time a baby is twenty months, or almost two years old, all of the twenty teeth of the first set have grown in.



The first set of teeth doesn't stay with you too long. At about age six, the first set of teeth begin to drop out as the second set of teeth push from above and below.



The twenty original baby teeth are replaced by thirty-two PERMANENT teeth.



The chart below shows you what extra teeth we get when the permanent teeth arrive.

Temporary Teeth	Permanent Teeth
8 incisors	8 incisors
4 cuspids	4 cuspids
0 bicuspids	8 bicuspids
8 molars	12 molars
20	32

How many more teeth are there in the permanent set?

_____

What are the extra teeth that grow in the permanent set?

_____

SEND FOR CORRECTION

Something for You to Do

When the first teeth come in we say, the baby's teeth are *erupting* (i rupt ing) or *cutting through*. This can be painful and often the baby is cranky at these times. Ask your mother if she has some pictures of you when you were *cutting* your first teeth. Perhaps she can tell some stories about you when your teeth first started to erupt.

FOURTH DAY

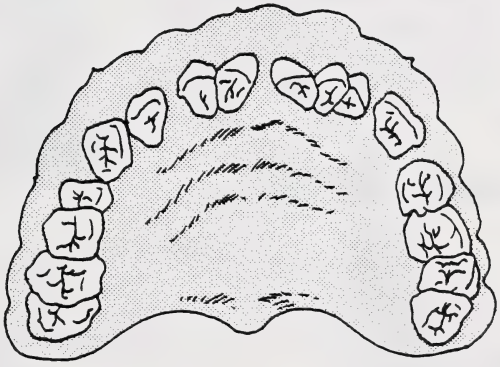
Health

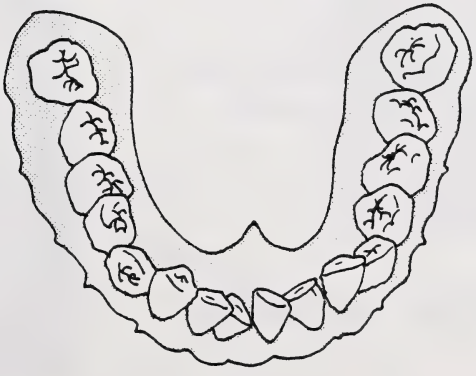
It is most important to take care of your teeth. There are several ways in which you can care for your teeth. First, you will find out *why* it is so important to care for your teeth.

Care for your teeth should begin with your first set of teeth. Perhaps you thought that the first set of teeth were not important since you lose them anyway. Why is it important to take care of the first set of teeth?

1. If the first set of teeth do not receive proper care, some of the teeth may fall out before they should. The teeth next to them will drift into the wrong places. The permanent teeth will then erupt in the wrong places.

2. Sometimes first teeth stay in the gums too long. Again the permanent teeth will come in the wrong places, or come in crooked.





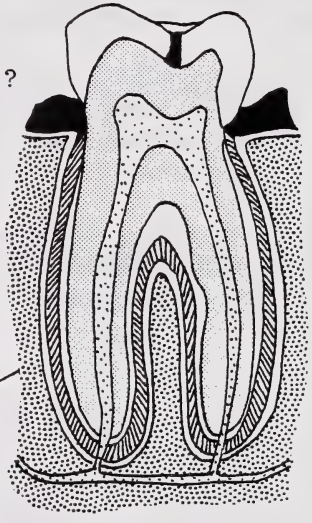
It is easy to see from this that first teeth should be taken care of too. When second teeth come in crooked even more problems are created.

3. When permanent teeth are crooked, food is never chewed as well. Your speech and the shape of your jaw are all affected by crooked teeth.

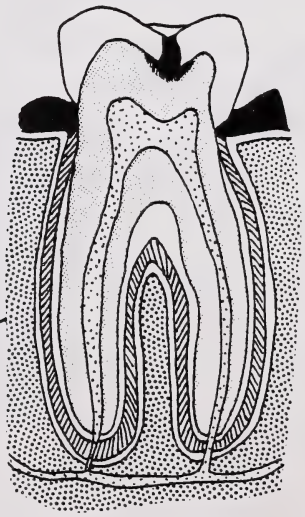
4. Crooked teeth or teeth crowded together are harder to keep clean. This makes it easier for decay to begin. This brings us to another question.

What is tooth decay?

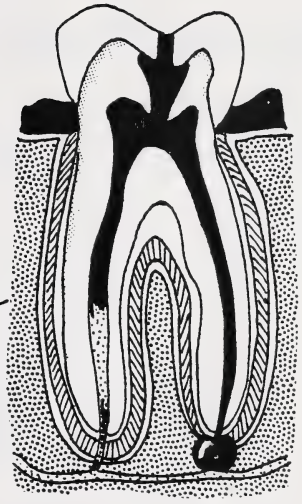
a. The enamel of our teeth is hard. However, it can be attacked, gradually worn down and destroyed. When this happens we say that the tooth is DECAYING. This decaying creates a hole or CAVITY in the tooth.



b. If this decay and cavity is not taken care of, the decaying process will continue. The dentine will be attacked.

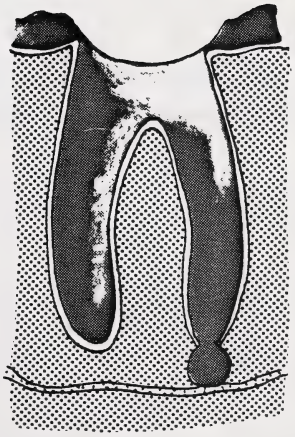


c. Finally the pulp is attacked by decay. In the pulp lie the tooth's nerves. Decay destroys the nerves and the tooth dies. Often the tooth will turn black.



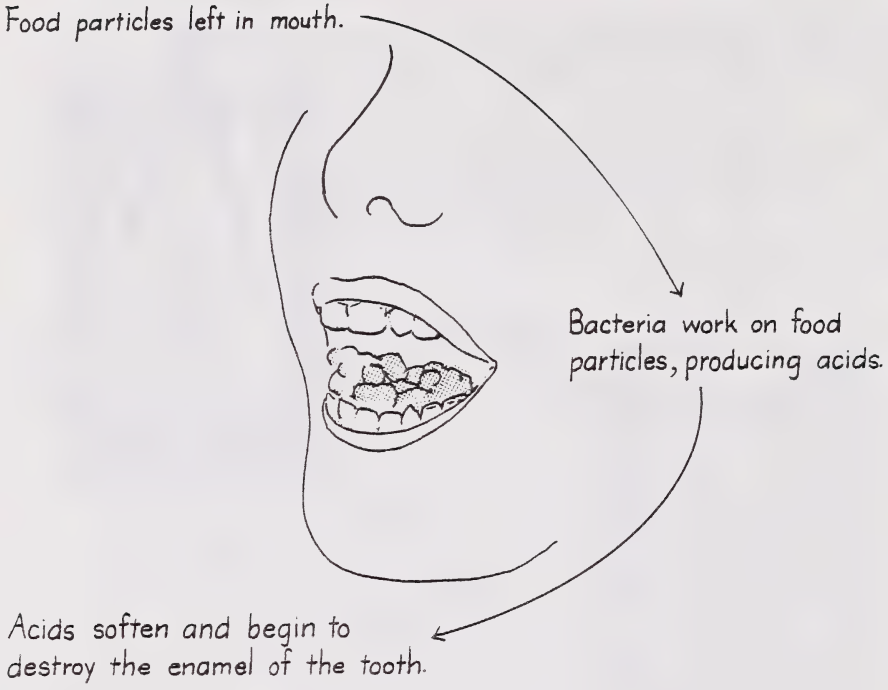
PULP KILLED

d. At this point the tooth is removed. With proper dental care this would not have to happen.



TOOTH REMOVED

What causes tooth decay?



Bacteria works on all food particles left in the mouth. However, bacteria works particularly fast on sugar.

Answer the following.

1. John has found a chip on the enamel of one tooth. Should he be concerned about it? _____ Why?

2. Sally still has many of her first teeth. She doesn't take good care of them. She thinks that it isn't important since she will get a complete permanent set.

   Is this good thinking? _____ Why?

3. Jim likes to eat candy, but he doesn't like to take care of his teeth. What might happen to some of Jim's teeth?

FIFTH DAY

Last day you found some reasons for taking care of both your first and permanent sets of teeth. Today you will find out *how* you can care for your teeth.

Maybe you have some rules for tooth care which you try to follow. Perhaps, after last day's work you can think of some more health habits for caring for teeth. In the space below write as many rules or good health habits for taking care of your teeth as you can think of.

_____

_____

_____

_____

_____

_____

_____

_____

_____

I hope you thought of some of the following.

1. GOOD EATING HABITS - Your teeth like the rest of your body require a well-balanced diet. If you eat foods with all the minerals and vitamins your body needs, then your teeth will also receive the proper food substances they need.

   Try to avoid eating an excess of sticky and sweet foods. Some of the sugar in them tends to stay in your mouth. It is difficult to brush or rinse sugar off the teeth completely. Remember that bacteria work quickly on sugar to produce acids that start tooth decay.

2. BRUSHING YOUR TEETH - There are three questions to be answered here: When? How? and What?

   a. WHEN do you think the teeth should be brushed? Why do you think this?

   _____

   _____

   _____

   _____

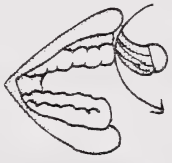
   _____

   _____

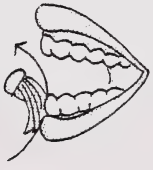
   It is most important to brush your teeth as soon after you have eaten as possible. This will help prevent the formation of acids in the mouth.

   b. HOW should you brush your teeth? Here is one recommended method.

   i. Brush the upper teeth down toward the biting edge.

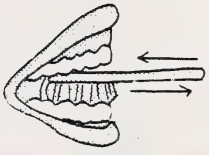


   ii. Brush the lower teeth up toward the biting edge.



iii. Brush all surfaces - next to the cheeks, next to the tongue, the upper chewing surfaces and the lower chewing surfaces.

iv. Brush each area at least ten times. Then rinse your mouth.



This method may not be the best for you. Ask your dentist what he suggests for you.

c. WHAT should you use to clean your teeth? Your dentist will advise you as to which

- toothbrush,
- dentifrice (den tə fris (toothpaste, tooth powder or liquid cleaner),
- dental floss is the suitable one for you.

Generally a tooth**brush** should have a flat brushing surface and be small enough so that all tooth surfaces can be reached.

3. REGULAR DENTAL CHECK-UPS - Brushing your teeth and eating proper foods help to prevent tooth decay as well as help build strong teeth. However, few people have perfect teeth even with the best food and brushing. Regular visits (twice yearly) to a dentist are still necessary. He can see and correct tooth troubles before they become big problems.

Answer the following.

1. A sign on a dentist's door said:

> Be true to your teeth and
> they won't be false to you.

What do you think the dentist was trying to tell his patients about teeth?

LESSON RECORD FORM

0504 Science
Unit III

Parent's or Supervisor's Comments:

For School Use Only

Assigned
Teacher: _____

Assignment
Code: _____

Graded by: _____

Lesson Grading
Science: _____
Health: _____
Neatness: _____

Date Lesson Received:

_____

Lesson Recorded: _____

_____
Signature

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(If label is missing or incorrect)

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St. Serv. 9-91

FIRST DAY

Health

Last week you learned a few reasons why you should take care of your teeth. You also found ways in which you could care for your teeth. Bacteria in your mouth work on foods, especially on sugar, to produce an acid. This acid softens tooth enamel and starts the decaying process. To keep food particles from collecting on your teeth and to get rid of some bacteria you brush your teeth. Is brushing an effective way to destroy bacteria on your teeth? Let's look further.

In your science kit you will find a little package called DISCLOSURE TABLETS. These tablets are used to check for the presence of bacteria on the teeth. The tablet will turn red when crushed. The crushed tablet will turn redder and stick to areas where bacteria has not been removed.

PROBLEM: Does brushing your teeth help get rid of bacteria?

MATERIALS: disclosure tablets found in your science kit

PROCEDURE:

1. After one meal today, do not brush your teeth.
2. After about two hours have passed, chew one disclosure tablet.
3. With your tongue, swish the crushed tablet over your teeth. Be sure the crushed tablet touches all areas of your teeth.
4. DO NOT SWALLOW the crushed tablet. Empty it into your bathroom sink. Rinse your mouth once with a small amount of water.

5. Check your teeth. Wherever the crushed tablet turned dark red and stuck to your teeth there are bacteria present.

6. Now brush your teeth as you were instructed in Lesson 23, FIFTH DAY.

7. Chew a second tablet now just as you did before. Note any areas of dark red on your teeth now.

NOTE: Your gums and tongue will be red too. The red color will go away after a while.

RESULTS: Check (✓) the right square.

First Tablet	After Brushing and Second Tablet
Did areas of red show on your teeth? ☐ YES ☐ NO	Did areas of red show on your teeth? ☐ YES ☐ NO If you said yes above, were there fewer areas of red than before you brushed your teeth? ☐ YES ☐ NO

CONCLUSION: From your results with these tablets, would you say that brushing your teeth helps get rid of bacteria?

_____

SECOND DAY

Health

For the past few weeks you have learned how proper foods, rest, cleanliness and posture all affect your body's growth. Each year you grow bigger and heavier. Your arms and legs grow longer. Your heart and lungs get bigger and stronger. This kind of growth is called PHYSICAL growth.

While you are growing physically, another growth is taking place. It is the growth of your PERSONALITY (pėr sə nal ə tē). Included in personality is:

1. what you look like (appearance), and
2. the way you speak and the way you behave (act).

You may behave differently with different people, but you are still the same you; with your own way of thinking and feeling, your own abilities and interests. The way you think, look, feel, your abilities and interests may be similar to other people's but they are *never exactly* the same as another person's.

Perhaps you have heard someone say,

"Oh, he wouldn't say that. It just isn't like him."

or

"That picture looks just like her."

This shows that you learn to know one person from another by the way each looks, behaves and speaks. We learn to know the different personalities.

It is personality that helps you tell one person from another.

Mary-Anne could tell which of her friends was which by the way each one looked, behaved and spoke.

For example:

	Carol	Terri
APPEARANCE	tall, slim, good posture	short, slim, good posture
BEHAVIOR	lots of energy always busy	quiet likes reading
SPEECH	quick, excited	slow, careful

The girls had different personalities and so Mary-Anne could tell them apart.

Perhaps you can tell which of your friends is which by their different personalities. Choose two friends or two other people you know well. On the lines on page 5, list ways in which you can tell your friends or the people, apart. You should use ideas about how they look, behave and speak.

	_____ (name)	_____ (name)
APPEARANCE	_____	_____
	_____	_____
	_____	_____
	_____	_____
BEHAVIOR	_____	_____
	_____	_____
	_____	_____
	_____	_____
SPEECH	_____	_____
	_____	_____
	_____	_____
	_____	_____

SEND FOR CORRECTION

THIRD DAY

Health

Last day you found that the different ways a person looks, behaves and speaks are a part of that person's personality. You also found that having different personalities helped you tell one person from another.

Today you will try to discover where personality comes from. Why is it that each of us behaves, speaks and looks differently from others?

INHERITANCE - Perhaps someone has said to you,

> "You have blue eyes like your father. You have inherited the color of your father's eyes."

When a person sees a child keeping time with some music he may say,

> "The child has his mother's feeling for music. He has inherited her musical ability."

Things like blue eyes and a feeling for music are not necessarily qualities which a baby has learned to do or to have. Instead they are qualities which the parents have and which they give or pass on to the child even *before* he or she is *born*. One can say the child has *inherited* or *received* certain qualities from his parents.

You can inherit or receive your parents'–

physical qualities such as:

- height
- coloring
- body build

mental qualities such as:

- a good mind

special abilities such as:

- artistic or musical.

Your personality is different from others because your parents are different. You may inherit your parents' qualities but you still are never exactly the same as your parents.

For example:

A boy may inherit his father's physical quality for being tall. The father may be 180 cm. The boy may be 170 cm or 175 cm. In either case the boy is still considered to be tall even though he is not *exactly* the 180 cm his father is.

Since you do not act, behave or speak exactly the same as others do, you have a different personality.

There is still another reason why you have a different personality. You will read about that next day.

What qualities in your personality have you inherited from your parents? Physical qualities like eye color are quite easy to spot. It is harder to decide if mental qualities and special abilities are inherited or something you learned from your parents after you were born. You may need the help of your parents in deciding what qualities have really been inherited. In the space below list qualities which you decided are really inherited.

FOURTH DAY

Health

Last day you found that your personality is different because:

1. You have *different* parents from whom you inherit *different* qualities.

2. Even though you inherit qualities from your parents you are still never *exactly* the same as them.

Another reason for differences in personality is your ENVIRONMENT (en vī rən ment). When you speak of your environment you mean your surroundings, such as your home, neighborhood and school. In these surroundings or environment many things happen to you. These things which happen to you are called EXPERIENCES. Experiences may be good or bad. All experiences help form the personality you have today. These experiences may be with things such as building a go-cart, or with groups of people as in a club. Your environment may allow you experiences that will help develop qualities that have been inherited.

For example:

> Ned seems to have inherited an ability to be a good leader. His environment (school) has allowed him the experience of being the leader of several clubs. Ned finds he likes working with people and being club leader. He is an even better leader now because of his experience. When people think of Ned's personality they say he is friendly, likes people and is a good leader.

From the example you see that Ned's *inherited ability* and the *environment* have helped Ned develop his personality. The same is true of your personality. *Inherited ability and experiences in your environment help develop your personalities.*

You are having experiences every day and so your personality is still being formed. You can improve your personality by improving your experiences. We often receive much experience in areas in which we are already quite good. It is most important to have experiences in those areas where we do not have as much ability. Having experiences in difficult areas can develop many good qualities in your personality: qualities such as determination, and appreciation for those who do well, in areas you find difficult.

For example:

> Keith really has a way of making friends. Keith has many opportunities to make friends as well. Keith's strong personality quality is his ability to make friends. However, Keith has a hard time concentrating on other things he does. He has an interest in music but really no special ability. Keith's parents decided that taking some music lessons might help Keith's concentration and develop a little more interest in the area of music. Keith decided to take some guitar lessons. After some time he did become more interested in music and his concentration in other areas improved too. When Keith went to hear a professional guitarist he had a better understanding of the guitarist's ability. Keith may never become a great guitarist but through this experience some weak spots in his personality have been strengthened.

Keith, Ned, you and everyone else have many experiences in which you learn about people and the world you live in. Gradually from the many experiences, you develop feelings and thoughts about the world you live in. You develop a way of looking at your world. These feelings, thoughts and ways of seeing the world are called ATTITUDES (at ə tud).

People who have had only bad experiences will often have bad feelings and thoughts about the world they live in. This means they will often have a bad attitude toward the world.

In life there are bad and good experiences. We must be glad for the good experiences and learn what we can from the bad experiences. By doing this we continue to develop our personalities.

Please complete the following questions.

1. Do you think you have more good or more bad experiences?

_____

2. Think of an experience you have had which left you with a good feeling.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

3. Think of an experience you have had which left you with a bad feeling.

4. What did you learn from your good experience?

5. What did you learn from your bad experience?

6. Do you see how experiences can form our personalities and attitudes – the way we speak and think about the world we live in?

SEND FOR CORRECTION

FIFTH DAY

Health

For the last three days you have seen how personalities are affected by inheritance and by experiences in your environment. You have seen that because you inherit different qualities and have different experiences your personality is different from other people's. However, there are personality qualities which you should have. These qualities can serve as guidelines to help you know if you are developing a good, pleasing personality.

Listed below are five personality qualities which you should all try to develop. Under each quality, write what you think each one means. You may use your dictionary if you're not familiar with some words.

GOOD PERSONALITY QUALITIES

1. He has a positive outlook.

2. He controls his emotions (feelings).

3. He gets along well with others.

4. He makes the most of his mental abilities.

5. He accepts responsibility for his actions.

SEND TODAY'S WORK FOR CORRECTION

You will be able to compare your answers with the notes in the next lesson.

LESSON RECORD FORM

0504 Science
Unit III

Parent's or Supervisor's Comments:

For School Use Only

Assigned
Teacher: _____

Assignment
Code: _____

Graded by: _____

Lesson Grading
Science: _____
Health: _____
Neatness: _____

Date Lesson Received:

_____

Lesson Recorded: _____

_____
Signature

For Student Use

(If label is missing or incorrect)

File Number:

_____

Lesson Number: _____

Date Lesson Submitted:

_____

Grading Scale:

A - Very Satisfactory
B - Satisfactory
C - Weak
D - Unsatisfactory

Apply Lesson Label Here

Name _____
Address _____
_____
_____
Postal Code _____

Please verify that preprinted label is for correct course and lesson.

Teacher's Comments:

_____
Signature

Keep this sheet when returned - it is your report.

ALBERTA DISTANCE LEARNING CENTRE

MAILING INSTRUCTIONS FOR CORRESPONDENCE LESSONS

1. BEFORE MAILING YOUR LESSONS, PLEASE SEE THAT:

(1) All pages are numbered and in order, and no paper clips or staples are used.
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(3) Your work has been re-read to ensure accuracy in spelling and lesson details.
(4) The Lesson Record Form is filled out and the correct lesson label is attached.
(5) This mailing sheet is placed on the lesson.

2. POSTAGE REGULATIONS

Do **not** enclose letters with lessons.

Send all letters in a separate envelope.

3. POSTAGE RATES

First Class

Take your lesson to the Post Office and have it weighed. Attach sufficient postage and a green first-class sticker to the front of the envelope, and seal the envelope. Correspondence lessons will travel faster if first-class postage is used.

Try to mail each lesson as soon as it has been completed.

When you register for correspondence courses, you are expected to send lessons for correction regularly. Avoid sending more than two or three lessons in one subject at the same time.

St. Serv. 9-91

FIRST DAY

Health

In the last lesson you learned that while you are growing physically, another growth is taking place. This is the growth of your personality. Since you look, speak and behave differently you have a different personality from other persons. Your personality is affected by inheritance and experiences in your environment.

Although your personality is different, there are at least five qualities which you can try to develop in your personality.

1. Have a positive outlook.
2. Have control of your emotions.
3. Get along well with others.
4. Make the most of your mental abilities.
5. Accept responsibility for your actions.

To develop these qualities in your personality you must grow in three areas.

1. Mentally
2. Socially
3. Emotionally

First, let's find out what is meant by mental, social and emotional growth.

Included in your physical growth is the growth of your brains. As the brain grows in size, *mental* growth is made possible. *Mental growth refers to how you use your brains.* For example, since Grade One you have increased your mental growth by gradually reading more difficult books. You have used your brains in finding out more and more about the world you live in.

While you are growing physically and mentally another growth is occurring. This growth is called *social* growth. *Social growth involves your abilities to get along with other people.* Getting along with other people means you must *learn* (mental growth) and *do* what is expected of you in different situations.

For example:

> Baby Ann grabbed a toy away from another baby. Baby Ann's understanding was not big enough yet for her to know that toys should not be grabbed from others. You expect babies to act this way until they develop more and are able to understand more.
>
> Ann , now in Grade Five, grabbed a skipping rope away from another girl. A quarrel began. By Grade Five you expect that Ann has learned to and will ask permission to use the rope. Instead, Ann has shown she did not know how or did not care to get along with the other girl. Ann must still grow mentally and socially.

Very closely related to social growth is *emotional* growth. *Emotional growth means you are learning to understand and control your feelings.* Feelings of anger are, perhaps, the most easily recognized.

For example:

> Perhaps a brother took your hockey stick without permission. If you wanted to use the stick yourself, no doubt you would be angry. The important thing now is how you will handle your anger. Will you take some of his equipment, or break something of his to get even? Perhaps you have grown emotionally so that you will be able to control your anger.

Earlier in today's lesson you learned that mental growth refers to how you use your brains in getting to know more about the world you live in. When you learn how to get along with others, to understand and control your feelings, you are learning more about yourself and your world. Your brain is involved in thinking about the experiences and feelings you have as you grow socially and emotionally. From these experiences and feelings your brain develops an attitude toward yourself and others. From this you can see that mental, social and emotional growth all affect each other.

It is important to remember that you expect babies, Grade Five pupils and adults to behave and speak in certain ways that tell you how old they are. It is just as important to remember that, because of inheritance and experiences in the environment, each person will grow mentally, socially and emotionally at different speeds. Therefore, not all babies, Grade Five pupils or adults will behave or speak in *exactly* the same way as others in their group, at a certain age.

SECOND DAY

Health

Use the notes from FIRST DAY to help you do the following exercise. In the stories below, decide if physical, mental, social or emotional growth is needed in each situation. Fill in each blank with one of the words found in the brackets after each story.

1. Carl and some of his friends collected and traded stamps with each other. Carl wanted to trade a certain stamp with Ken. Ken had already promised the stamp to another friend. Carl grew angry, threw his stamp book down and stomped out, saying he didn't want to trade stamps with Ken again. Carl must still grow

   _____ and _____. (socially, emotionally, mentally, physically)

2. Nora and Karen were the same age and height. Both girls were trying out for the track and field events at school. Nora was able to do all the events without becoming half as tired as Karen. Karen couldn't understand this. Finally Karen's mother explained to her that even though she was the same age and height as Nora, other parts of her body had not grown as quickly. Many inside parts still had to catch up in growing. Even though Karen was as tall as Nora, she couldn't do quite as much as Nora, without being tired. Karen still had to grow

   _____. (socially, physically)

3. While doing his arithmetic homework, Glenn found some of the problems were very difficult. He asked his older brother Neil for some help. Neil was able to do the problems without much difficulty. Neil had grown

   _____ (mentally, socially). Glenn still had to

   grow _____ (physically, mentally).

4. The poster contest was over and Jan had lost. She had worked very hard and so losing was a big disappointment. Jan decided that she would never try again. Jan's mother saw how disappointed Jan was. She told Jan that there were other contests, and that as she practiced she would become better. Perhaps she could learn something from the girl who won the contest. She still had a chance to win in hundreds of other contests. Jan overcame her disappointment. Jan felt better and decided she would try other contests. Jan was growing

   _____. (socially, emotionally)

SEND FOR CORRECTION

In the next few days you will find ways in which you can grow socially, emotionally and mentally.

THIRD DAY

Health

On the FIRST DAY of this lesson are listed five qualities which you can develop in your personality. To develop these five qualities you must grow *mentally, socially* and *emotionally.*

Let's look at how emotional growth begins. If you watch a baby you can see that he has feelings or emotions. There are things he likes and things he doesn't like. He may giggle or cry. As the baby is held and fed he learns to *trust* the people who love and care for him.

A young child learns there are things his parents think are right and things they think are wrong. As the child does new things correctly or the right way, he is praised. This gives the child a feeling of *self-confidence.* He also develops a *conscience* — that voice inside that tells him if he is right or wrong.

At first a baby is *self-centered.* He is aware of other people only if they bring him happiness. The young child soon *learns that others have feelings too.* Gradually *empathy* (em pə the) the ability to put yourself in someone else's place, begins to develop. The child begins to be interested in doing things to help other people, such as his parents. Then he may become interested in helping special groups or the whole community.

In emotional growth there is gradually less concern with satisfying yourself (baby) and more concern with helping others (adult).

How can you continue to grow emotionally? Here are a few guidelines you might try to follow in growing emotionally.

> The supervisor should read the following guidelines aloud. After each point, discuss with the pupil how he or she can use the guideline to grow emotionally.

1. TRY TO UNDERSTAND AND CONTROL YOUR EMOTIONS

A baby screams and cries when it cannot have its own way. A person who has not grown emotionally expresses anger in much the same way. He speaks in loud, angry tones or he may slam a door just as hard as he can.

When you are emotionally grown-up, you do not express your feelings in such a childish way. You control yourself. This doesn't mean that angry feelings should be shut up inside of you and pushed away. There are several ways in which you can control anger. One is to simply leave the room until the anger dies down. Another is to become involved in some physical activity – walk, shoot some baskets, or clean up your room. By this time the anger is worked off and you may find you can see the other person's point of view. Then you can go to him and settle the quarrel quietly.

2. TRY TO UNDERSTAND AND CONSIDER THE FEELINGS OF OTHERS

As a baby you were very selfish. Everything was done for you. As you continue to grow you find life is changed. You cannot have everything just the way you want it. You have the right to think and feel as you do, but then *others* have the *same right*. A person who insists on having his own way and forgetting about the thoughts and feelings of others is a selfish person and one who has not grown emotionally. You must think of problems not only from your point of view but from the viewpoint of others. This shows you care about others and not just yourself. This shows you are growing emotionally.

This growth can start right at home. You must realize that parents, brothers and sisters have feelings and thoughts too. You must learn to share the world with them. Your brothers and sisters want and need your parents' love. They may like some things you own. They want to play as much as you do. Consider how they feel and share the world by sharing your parents' love – don't be jealous, share things you own, and share household tasks so that everyone can have time to play.

You can share by allowing someone else to have feelings. If a sister comes home after losing a baseball game, teasing her about it isn't showing any consideration for her feelings. You can show you care by asking her if she wants to talk about it. This is not the time to talk about how great your team is. Instead you must try to encourage her. If she would rather be left alone then you must allow her to be alone too.

3. LEARN TO ACCEPT RESPONSIBILITY FOR YOUR ACTIONS

Responsibility involves doing what you can and should do in each situation in life. Perhaps you have heard someone say,

"He made me do it!"

This is usually the cry heard from someone who has done wrong and won't face it.

You have responsibilities toward yourself and others. Responsibilities toward yourself might include:

- getting proper rest to keep healthy.
- eating properly to keep healthy.
- improving your posture.
- grooming yourself.

Responsibilities towards others might include:

- telling parents where you are.
- helping parents by doing your jobs in the house.
- watching over younger ones.
- remembering table manners and to be courteous to others.
- taking the blame for your own wrong doing, correct it if possible, and going on from there.

Perhaps you can see that as you consider feelings and thoughts of others it will become easier to take responsibility for your actions.

4. GET HELP FROM ADULTS WHEN YOU NEED IT

As you grow toward being an adult you encounter many problems. Learning how to solve these problems is part of growing up. Some problems may be with school work, or with getting along with others, or with the way you feel about yourself. When a problem comes up you should do your best to think of a solution. However, you cannot always do this. There are people who care and understand and can give you guidance; parents, teachers, ministers and youth leaders, just to name a few.

Perhaps as your supervisor has read these guidelines you have thought of some ways in which you *have* grown or *could* still grow emotionally. In the space below tell about one way you *have* grown or still *could* grow emotionally.

FOURTH DAY

Health

Last day you found ways in which you can grow emotionally. When you start your emotional growth you are self-centered, but gradually you become more people-centered. Being involved with people takes you into social growth. Social growth means you must learn how to get along with others. To get along with others you must develop qualities which are pleasing to others. Many of these qualities which are pleasing to others are developed out of your emotional growth. You can say that emotional growth flows into social growth.

What are some of the pleasing social qualities which can develop out of emotional growth?

1. As you try to consider and understand the feelings of others in emotional growth, you are developing a pleasing social quality – consideration for others.

2. In emotional growth, you learn to understand and control your emotions. Having control of your emotions is a pleasing social quality.

3. In emotional growth, you learn to take responsibility for yourself and for the jobs you are given to do. Being a responsible person is a pleasing social quality.

From this you can perhaps see that you cannot separate emotional and social growth. Social growth flows out of emotional growth. To grow socially, you must continue to grow emotionally so that these pleasing social qualities can develop. You will continue to grow socially as you put these pleasing qualities to use.

Let's see how a person, who has developed these qualities, will act as a leader and as a follower in a group.

A group leader who has developed these social qualities, will take responsibility for his job as a leader. This means he will do what he can and should do in his position. He will not be pushy or demand that others accept his ideas. Instead, he will try to be considerate of the thoughts and feelings of others in the group. If things do not go exactly as he planned, he will handle his anger or disappointment, in a way that others will not be hurt.

A follower or member of a group will do the job assigned to him. If he must work with others in the group he will be considerate of their feelings and thoughts. If things are not done exactly as he would like, he will not sulk or pout. If he feels angry, he will "work it off", and discuss the problem with the group later.

When you have developed the qualities which are pleasing to others, you have grown socially. Read the following story. Decide how Dan,

1. has grown socially, and
2. could still grow socially.

Space below the story is provided for your answer.

Dan was voted in as the leader of the social committee in his school. Dan immediately got busy organizing the committee, calling the meetings and listing the various social functions they would have to organize as a committee.

Dan had some pretty good ideas about the way the socials should be organized. The other members of the committee were all allowed to express their thoughts and feelings about the socials. The committee members' ideas were much the same as Dan's, so everything went smoothly.

Each year the social committee was responsible for organizing an event which would raise more money than other socials during the year. Dan was brimming full of ideas on how they could have a car wash and a party afterwards. Some other members had been thinking about a carnival to raise this money. As it turned out Dan's idea was not accepted. Dan was disappointed. He had a hard time

imagining how a carnival could be much fun. When he was asked how he would help in this project, Dan suddenly felt he wouldn't have much time for something as stupid as a carnival. He thought the group could take care of it themselves, if they wanted to have a silly carnival.

1. How has Dan grown socially?

2. How could Dan still grow socially?

FIFTH DAY

Health

Last day you learned how social growth develops out of emotional growth. Today you will investigate mental growth. How can you grow mentally?

1. DEVELOP A POSITIVE MENTAL ATTITUDE

First you must recall what is meant by *mental attitude*.

mental - involves *thinking* and *feeling*

attitude - the *way* you think and feel about your world because of your experiences

The way in which you think and feel about your world may be *positive* or *negative*. When a person has many bad experiences he may think of the world as an awful place. He has a negative attitude — nothing is any good to such a person. Someone with a negative mental attitude might say:

"I can't do anything right."
"Nobody likes me."
"What's the use of trying?"
"I'm stupid and I can't help it."

Some people who have had some good experiences have still got a negative mental attitude. They haven't learned how to find good things in even some of the "not so good" experiences. The person with a positive mental attitude is able to find at least a little good in most things that happen to him. He makes the best of situations. The person with a positive mental attitude might say:

"There are a lot of other things we can do even if we can't do what we first wanted to."
"I'll try and do my best."
"There's got to be a way to solve this."

In growing mentally you should try to find something good and of use in all that happens to you. A positive mental attitude is very acceptable socially as well. Have you ever heard someone say:

"It's really hard to like him, because he's so negative about everything."

OR

"She's so bright and cheery, always finding something good about each day."

When you meet experiences with a positive attitude, you're much more likely to succeed at your tasks.

2. TRY TO DEVELOP CERTAIN HABITS OF THINKING

Habits, good or bad, are usually hard to break. A good habit to develop is that of thinking *positively*. People who think positively are often *curious* people. Curiosity is a good habit to develop. When you hear a new word or start a new project, you should use your dictionary and library to find more information. Be curious enough to want to know more.

3. TAKE ADVANTAGE OF OPPORTUNITIES FOR IMPROVING YOUR MENTAL ABILITIES

Going to school, joining clubs, taking lessons such as music or tennis lessons, are opportunities which you may have. You should use these opportunities to find out all you can about the world you live in. The more you can learn, the more you will be helping your mental growth.

For a few days now, you have investigated ways to develop your personality through emotional, social and mental growth. Have you found ways in which you can still develop your personality? How many of the personality qualities listed on the FIRST DAY, Lesson 25, have you developed?

Decide whether the following show negative or positive attitudes. Put N beside negative comments and P beside positive comments.

1. It will probably rain, so what's the use of planning anything! _____

2. Let's plan some fun games for indoors in case it rains. _____

3. I flunked the last exam. I can't see that studying is going to do much good either. _____

4. Well, I didn't sew the sleeves right the first time, but I surely learned how they should be done. _____

5. I couldn't care less to go to the silly party. _____

6. Swimming lessons! Who needs them! I surely don't. _____

7. Well, I might come if there isn't a storm or something else doesn't happen. _____

8. I'll do my best to come even if it does storm. _____

LESSON RECORD FORM

0504 Science
Unit III

Parent's or Supervisor's Comments:

For School Use Only

Assigned
Teacher: _____

Assignment
Code: _____

Graded by: _____

Lesson Grading
Science: _____
Health: _____
Neatness: _____

Date Lesson Received:

_____

Lesson Recorded: _____

_____
Signature

For Student Use

(If label is missing or incorrect)

File Number:

_____

Lesson Number: _____

Date Lesson Submitted:

_____

Grading Scale:

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C - Weak
D - Unsatisfactory

Apply Lesson Label Here

Name _____
Address _____
Postal Code _____

Please verify that preprinted label is for correct course and lesson.

Teacher's Comments:

_____
Signature

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ALBERTA DISTANCE LEARNING CENTRE

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St. Serv. 9-91

FIRST DAY

Health

For the past week you have been finding ways in which you can develop your personality through emotional, social and mental growth. Much of your personality growth is involved in learning to care about others.

One way to show you care about others is by knowing how to help others and yourself when accidents occur. This kind of care is called *First Aid.* First Aid is the thing we can do to help an accident victim, before a doctor arrives. First Aid involves:

1. knowing *what things you can do* to help a person who has had an accident and

2. knowing *when you should do nothing,* but call a doctor quickly and make the victim as comfortable as possible.

Today, I would like you to meet two of my friends, Freddy and Tim. Tim and Freddy met quite accidentally as you will see. I'll let Freddy tell how he met Tim.

Have your supervisor read the following while you listen for:

1. types of bleeding and how they are caused and
2. how First Aid treats these wounds.

"Hi, I'm Freddy and that's my friend Tim. Tim and I met on the baseball diamond on first base. Here's how we met.

I had slugged the ball really well. In a flash I was racing for first base! But I tripped, crashed into Tim, scraping my face, elbows and hands. To top it off, Tim wasn't in position to catch the ball when the fielder threw it. The ball landed smack on my nose — bull's eye! I stood up rather unsteadily and then my nose began to bleed. Tim suggested that we go to his house across the street.

At his house Tim told me to sit in a chair and lean forward slightly. He told me to breathe through my mouth rather than through my nose. He pinched both sides of my nose just below my nose. He said I shouldn't blow or plug my nose. Soon the bleeding stopped. "If the bleeding doesn't stop," Tim said, "it is smart to get medical attention."

While I washed my scraped face, arms and elbows with warm water and soap, Tim told me that scrapes are a kind of bleeding too. The blood vessels near the surface of the skin were torn. Usually the bleeding of scrapes is not bad. When we cut ourselves with something sharp, the blood flows more freely because a blood vessel has been cut. If a cut is not deep we can clean it like we clean scrapes — with soap and water and then cover it with a sterile* cloth bandage. Putting a lot of pressure on the cut area helps stop the blood from flowing, but we should make sure there aren't any foreign objects, such as gravel or glass in the cut before applying the pressure. "If it is a deep cut, a doctor may need to take care of it," said Tim. "In which case I would put a clean cloth over the cut until the doctor sees it," continued Tim.

"I think I have a few bruises too," I told Tim. "Are they a kind of bleeding too?"

*sterile - free of any germs

"Yes," replied Tim, "they are. If you're hit with something, the small blood vessels near the surface of the skin will break. The blood then seeps just below the surface of the skin. Putting something cold on a bruise often helps to keep down any swelling."

"Do you know of any other kind of bleeding?" I asked Tim.

"Yes," said Tim, "there is one really bad one. It is called a puncture. My dad backed into an exposed nail in the garage. The nail punctured his lower leg, going deep and below the surface of his skin. It bled quite a lot. Mom said it was blood going to the heart because it was dark red. If it was blood coming from the heart it would be bright red. Mom said if it had been bleeding really badly she would have called the doctor right away. Instead, she made my dad lie down to reduce the flow of blood. Mom checked for broken bones and since she found none, she carefully rolled his pant leg up to expose the puncture. If the blood had hardened around the wound, she would have left the wound. There were no foreign objects such as dirt or glass so she didn't have to remove any. Often it's better to wait for a doctor before trying to remove any foreign material. To stop the bleeding, Mom put clean pads of cloth on the wound. She applied pressure to the pad and wound strips of cloth firmly around the pad and leg. When the bleeding lessened she put another clean pad on Dad's leg. I was glad my Mom knew about First Aid that time."

Well, that's how I met Tim and how I learned about First Aid. I was lucky to have Tim as a friend as you will see later.

SECOND DAY

Health

On the FIRST DAY of this lesson you read about various kinds of bleeding. Listed below are four types of bleeding with a description of each type. With a line, link the type of bleeding with the correct description.

Type of Bleeding	Description
Bruise	This bleeding is caused by falling and tearing the blood vessels near the surface of the skin.
Puncture	In this bleeding the blood flows freely because a blood vessel has been cut right through.
Scrape	When someone is struck by an object, the blood vessels below the skin break and the blood seeps just below the skin's surface.
Cut	This bleeding is quite free-flowing caused by an object being struck directly, and deeply into and below the skin's surface.

1. When caring for Freddy's bleeding nose, Tim told Freddy several things to do and not to do. Tim was following some First Aid rules. These First Aid tips can be useful for you too. Make a list of the things Tim did when caring for Freddy.

   1. _____

   2. _____

3. _____

_____

4. _____

_____

2. After caring for Freddy's bleeding nose, Tim went on to tell us how to care for cuts. Make a list of the steps to follow in caring for cuts.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

3. How did Tim suggest you take care of bruises?

_____

_____

_____

4. Tim's mother followed some First Aid rules when she cared for the punctured leg. She thought of nine steps to follow in giving First Aid to Tim's father. Find the nine steps to be followed when caring for a puncture. Be sure to keep them in the correct order.

1. _____
_____

2. _____
_____

3. _____
_____

4. _____
_____

5. _____
_____

6. _____
_____

7. _____
_____

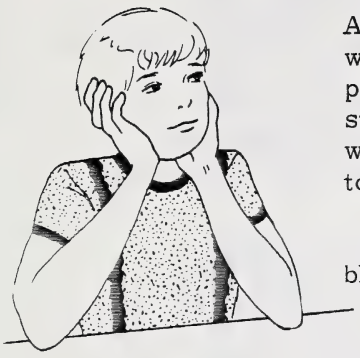
8. _____
_____

9. _____
_____

SEND TODAY'S WORK FOR CORRECTION

THIRD DAY

Health



I began thinking more about the First Aid tips Tim and his mother had used. I wondered if First Aid could be used for people who fainted or choked, or even stopped breathing. I asked Tim's mother what caused fainting. Here is what she told me.

"The brain may not receive enough blood for a number of reasons such as

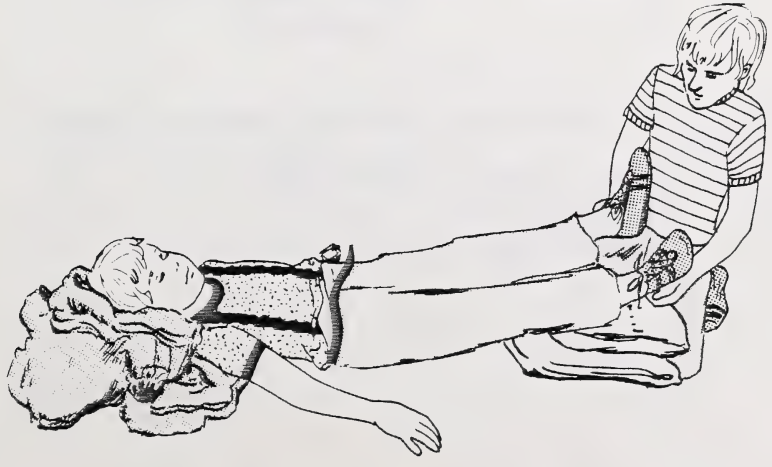
- standing or sitting too long
- bad news
- fear, pain or illness.

When this happens a person will faint and remain unconscious for a short period of time until more blood returns to the brain."

I asked her if there was anything that could be done for someone who fainted. She told me to lie down and Tim would show me what could be done. This is what Tim did.

1. He raised my feet and put two pillows under them. This way my feet were higher than my head and the blood could flow more easily to my brain.

2. Next he loosened my belt and my top shirt button. He told me any tight clothing should be loosened.



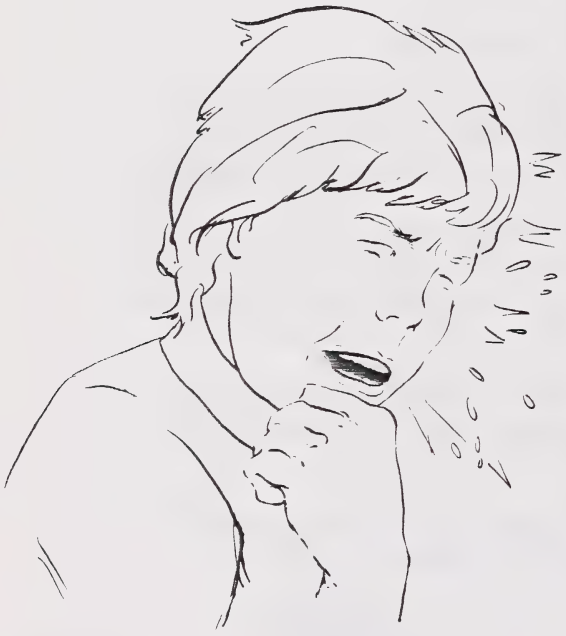
Tim's mother told me to imagine that I had now become conscious again.

3. Tim gave me a few sips of water then.

These were the three things that I could do to help someone who had fainted.

I still wanted to know how to help someone who was choking. Again Tim's mother told me what to do and what not to do.

When something is caught in the throat or windpipe:



1. Do nothing for the moment. Back slapping or reaching into the mouth may force the object back down the throat. Most often the coughing will bring up the foreign object.

2. If coughing continues and the person becomes increasingly blue, then slap the back sharply between the shoulder blades.

3. If the person stops breathing, start rescue breathing immediately.

4. Call the doctor and rush the person to the hospital immediately.

Then Tim's mother showed me her book where Mouth to Mouth Rescue Breathing was shown. It looked like this:

1. 

Remove any foreign matter from the person's mouth. Open the airway by lifting the neck with one hand and tilting the head back with the other hand.

2. 

Pinch nostrils to prevent air leakage.
Keep the air passage open by keeping the neck elevated (raised).

3. 

Seal your mouth tightly around the person's mouth and blow in. The person's chest should rise.

4. 

Remove mouth.
Release nostrils.
Listen for air escaping from lungs.
Watch for chest to fall.

Repeat breathing, removing mouth each time to allow for escape of air.
For an adult breathe about 12 times per minute.
For a child take smaller breaths, about 20 per minute.
Continue until person breathes for himself.

Tim's mother suggested that Tim and I practice some Rescue Breathing with an old rag doll that belonged to Tim's sister. We felt silly at first, but then Tim's mother said we could save a life someday. We began to see how serious this was.

I would like you to practice Rescue Breathing. Ask your supervisor to help you find some object which you could imagine to be an *unbreathing* person. Have her check you on all the points in Rescue Breathing. Tell me how you did your Rescue Breathing.

FOURTH DAY

Health

It wasn't long after Tim and I met on first base, when he asked me to go to the lake with him and his parents for the day. That was great! We had a fantastic time boating and swimming.

There were lots of Alberta wild roses in the area too. Of course the bees can't resist these flowers. One of those bees must have mistaken me for a flower because he stung me. That hurt!

Tim's mother was quick to remove the stinger with a pair of tweezers. She made a paste with baking soda and water to help take the swelling down. Then I found out about allergies (al ər jēs).

Read the following with your supervisor.

Tim's mother: "Luckily you're not allergic (al ər jik) to bee stings."

Fred: "What does allergic mean?"

Tim's mother: "Allergic means that some people get a rash, or become quite sick when they eat certain foods, touch certain things or are bitten by insects. People with allergies must get special treatment from a doctor so that their bodies don't react so badly to certain foods or to bee stings. If someone with a bee sting or any insect bite has an unusual swelling or collapses, a doctor should be called immediately."

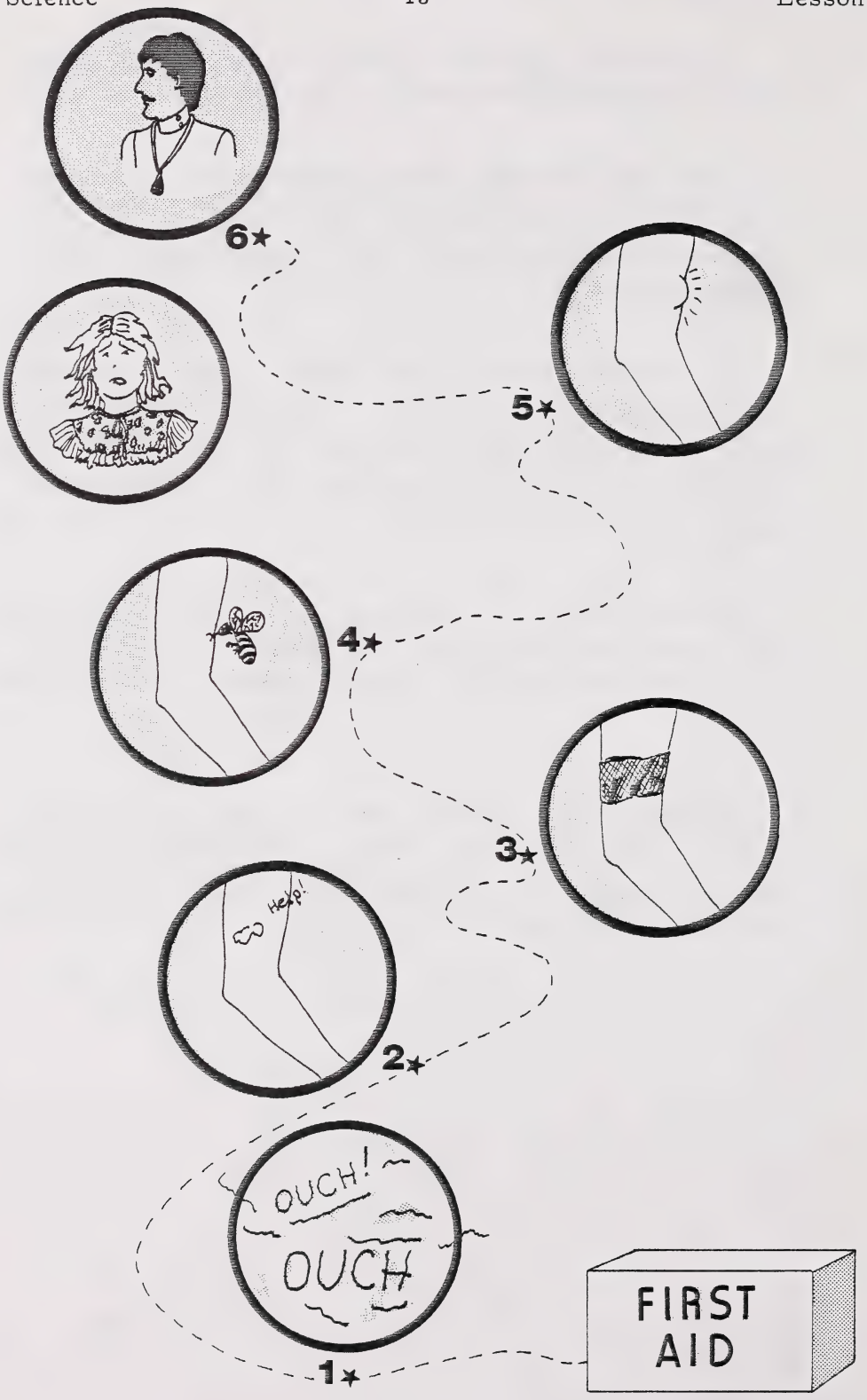
I surely was glad that I was not allergic to bee stings. The swelling went down quickly on my arm.

Later that same day Tim's mother burned her hand on the camp stove. I guess burns can be painful, even mild burns. She put her hand into a pail of cold water to cool the burn and ease the pain. Tim wanted to know if it was a really bad burn.

His mother replied, "There are no blisters and no skin is broken, so it is a mild burn, Tim. In a really bad burn the skin will blister and break. It is best to let a doctor break the blisters from a really bad burn. Cleaning a burn should be left to the doctor as well. It is a good idea to wrap the burn area in a sterile cloth until you get to a doctor."

Tim and I felt we had learned some useful First Aid tips about insect bites and burns. Remember that First Aid is the thing you can do before a doctor comes or before you get to a doctor.

On page 13 is a pathway from First Aid to the doctor. Notice the numbers on the pathway. These numbers are the same as the numbers of the questions on the next page. If you can answer these questions you will make it safely from First Aid to the Doctor.


6★
5★
4★
3★
HELP!
2★
OUCH!
OUCH
1★
FIRST AID

1. What is the difference between a mild burn and a really bad burn?

2. What can you do to help a mild burn?

3. When someone has a bad burn what is the best thing to do for him?

   What *should not* be done with a bad burn?

4. What is the first thing to be done if someone has a bee sting?

5. What can be done to help ease the swelling from a bee sting or any insect bite?

6. What can happen to people who are allergic to bee stings?

FIFTH DAY

Health

Tim and I felt we had learned quite a lot about First Aid. Then we began thinking that there are probably many kinds of accidents and situations where we wouldn't know what to do. Maybe we couldn't do anything. We decided to ask Tim's mother again. Here is what she told us.

"There are things we can do in most situations and especially in the case of very serious accidents.

1. If there is some bleeding, try your best to stop it.

2. Call a doctor or another adult.

3. Keep the accident victim calm by being as calm as you can. Tell the person that help is on the way.

4. Try to make the accident victim as comfortable as possible *without* moving him.

5. Try to keep him warm. A jacket or warm blanket over him will always help.

6. If the accident victim gets very upset and cold, he may go into shock."

Shock means the body suddenly cannot handle the accident situation. It is as if the body becomes so frightened it gives up working. People in accidents often die from shock rather than from the accident wound. Keeping the body warm and the person calm, are ways to help prevent the accident victim from going into shock.

After hearing about First Aid from Tim's mom we decided to take a First Aid course, just as soon as we were able.

LESSON RECORD FORM

0504 Science
Unit III

Parent's or Supervisor's Comments:

For School Use Only

Assigned
Teacher: _____

Assignment
Code: _____

Graded by: _____

Lesson Grading
Science: _____
Health: _____
Neatness: _____

Date Lesson Received:

_____

Lesson Recorded: _____

_____
Signature

For Student Use

(If label is missing or incorrect)

File Number:

_____

Lesson Number: _____

Date Lesson Submitted:

_____

Grading Scale:

A - Very Satisfactory
B - Satisfactory
C - Weak
D - Unsatisfactory

Apply Lesson Label Here

Name
Address
Postal Code

Please verify that preprinted label is for correct course and lesson.

Teacher's Comments:

_____
Signature

Keep this sheet when returned - it is your report.

ALBERTA DISTANCE LEARNING CENTRE

MAILING INSTRUCTIONS FOR CORRESPONDENCE LESSONS

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(1) All pages are numbered and in order, and no paper clips or staples are used.
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(3) Your work has been re-read to ensure accuracy in spelling and lesson details.
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(5) This mailing sheet is placed on the lesson.

2. POSTAGE REGULATIONS

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3. POSTAGE RATES

First Class

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St. Serv. 9-91

FIRST DAY

Pick up your pen or pencil. Now let it drop to the floor. Why does your pencil drop? Why didn't it float away? Why don't you float away? How are rockets able to leave Earth? Why doesn't Earth drift away from the Sun? Why doesn't our Moon drift away? These are a few of the questions you will try to answer in this unit.

To help you find the answers to these questions you must have a close look at the idea of weight. How much do you weigh?

I weigh _____ kg.

Just what do we mean when we say we weigh a certain number of kilograms?

What is weight?

Let's go back to the pencil which dropped to the floor. The pencil dropped because there was a *pull or force on it.* This pull is called the *force of gravitation* (grav ə tā shən).

When objects are pulled toward the Sun, Moon or any of the planets, such as Earth, Mars or Jupiter, this pull is called the force of gravitation.

On Earth the force of gravitation pulls objects towards the center of Earth. However, on Earth, the gravitation is a special kind called *gravity.* You can say the gravity on Earth *or* force of gravitation pulled the pencil down.

It is the same force of gravitation or gravity that keeps you from floating off Earth into space. You can see that this force or pull is very important to everything on Earth.

This force of gravitation is a part of what weight is all about.

Answer the following questions on the lines below.

1. What is the name of the force which pulls objects toward Earth, Mars or any other planet?

_____

2. The force of gravitation is given a special name on Earth. It is called

_____

3. What is it that keeps you from floating off into space?

_____

_____

_____

_____

_____

SEND FOR CORRECTION

SECOND DAY

Last day you found that the force of gravitation on Earth is what kept you from floating off into space. This force of gravitation is also a part of what weight is all about.

When you say the force of gravitation is pulling you to Earth you mean your body is being pulled to Earth. Your body consists of bones, flesh and blood. All of these materials together, bones, flesh and blood is called your MASS.

> MASS is the AMOUNT of materials (bones, flesh and blood) which you have in your body.

The amount of materials or mass in your body is measured in kilograms.

On Earth, if a person's mass is 45 kg, this means he has 45 kg of material in his body.

The force of gravitation is pulling on each person's mass.

> WEIGHT is the force of gravitation pulling on each person's mass.

When you want to know how much a person weighs you usually say:

How much do you weigh?

What you really mean is:

What is the force of gravitation pulling on your mass?

When you step on a scale to find your weight, what are you really measuring?

_____

_____

_____

_____

_____

SEND FOR CORRECTION

THIRD DAY

Yesterday you found that:

> Weight is the force of gravitation pulling on your mass.

Another way of saying this is:

Weight = Force of Gravitation × Mass

Using this equation you can do some problem solving.

For example:

PROBLEM:

On Earth the force of gravitation is 1. The mass of a man is 45 kg. What is the man's weight?

SOLUTION:

1. Weight = Force of Gravitation × Mass
2. Weight = 1 × 45 kg
3. Weight = 45 kg
4. The man weighs 45 kg.

Answer the following questions, using the problem above as a guide.

1. Sally weighed her cat on the bathroom scale. Ginger weighed 2 kg. What is Ginger's mass?

   1. Weight = Force of Gravitation × Mass
   2. 2 kg = 1 × m (mass)
   3. _____
   4. _____

2. George found the mass of his go-cart to be 40 kg. How much does George's go-cart weigh? (Remember that the the force of gravitation on Earth is 1.)

1. _____

2. _____

3. _____

4. _____

3. Fill in the blanks.

Object	Weight	Mass
bag of oranges	3 kg	_____
a truck	_____	1 tonne
a peanut	1 g	_____
a brick of butter	5 kg	_____
a piano	670 kg	_____

SEND FOR CORRECTION

FOURTH DAY

From your work yesterday, you learned that weight is the force of gravitation pulling on a mass. You probably noticed that weight always equalled the mass.

For example:

A certain man has a mass of 78 kg. If the force of gravitation pulling on the man is 1, what is the man's weight?

Weight = Force of Gravitation × Mass
Weight = 1 × 78 kg
Weight = 78 kg
The man's weight is 78 kg.

Perhaps you are thinking that since weight and mass are always the same number, you do not need to bother with force of gravitation.

Force of gravitation is important and you cannot leave it out of the equation above.

Let's make an imaginary trip to the Moon with an astronaut. The chart below shows the information you have about the astronaut on Earth.

Astronaut on Earth

Weight	Mass	Force of Gravitation
72 kg	72 kg	1

Now when the astronaut lands on the Moon, you will find that his weight is only 12 kg. *Do you think his mass will be the same as* or *different than his weight?* (Think: What *is* mass?) I think his mass will be _____.

I hope you said his mass will be different from his Moon weight. But why? Remember that mass is all the materials (flesh, bones, blood) which the astronaut has in his body. He certainly hasn't lost any of his bones, flesh or blood. His mass is still the same.

The astronaut's Moon weight is 12 kg and his mass is still 72 kg. *Something has changed and it is the force of gravitation.*

The force of gravitation on Earth is 1. What is the force of gravitation on the Moon?

To find out you must compare the astronaut's Moon weight to his Earth weight.

Moon weight	$\frac{12}{}$	$(12 \div 12)$	=	$\frac{1}{}$
Earth weight	$\frac{72}{}$	$(72 \div 12)$	=	$\frac{6}{}$

The force of gravitation on the moon is $\frac{1}{6}$ of the force of gravitation on Earth. Or, in other words, the force of gravitation on the Moon is 6 times less than the force of gravitation on Earth. This means there is *less pull* on the astronaut when he is on the moon. Since there is less pull, the astronaut weighs less on the Moon. However, he has lost none of his mass — bones, flesh and blood.

Astronaut on Moon

Weight	Mass	Force of Gravitation
12 kg	72 kg	$\frac{1}{6}$ of Earth's force of gravitation
		or
		6 times less than the pull on Earth.

Now that you know the force of gravitation on the Moon is $\frac{1}{6}$ of the force on Earth you can do some problem solving.

For Example:

PROBLEM:

On Earth Bob weighs 48 kg. He wants to know what his weight on the Moon would be.

SOLUTION:

Force of Gravitation on Moon = $\frac{1}{6}$

Weight on Earth = 48 kg

Weight on Moon = Weight on Earth × Force of Gravitation

$m = 48 \text{ kg} \times \frac{1}{6}$

$m = \frac{48}{6}$

$m = 8$

Bob's weight on the Moon is 8 kg.

Bob's mass on Earth is 48 kg. His mass on the Moon will still be 48 kg.

Complete the following problems. Use today's notes and examples as a guide.

1. (a) Ann's mass on Earth is 60 kg. What is Ann's weight on Earth? (Show your work.)

(b) Using Ann's weight on Earth find what her weight on the Moon would be. What is Ann's mass on the Moon?

2. (a) Make up a problem using weight, mass and force of gravitation on Earth.

PROBLEM:

(b) Now solve your problem.

SOLUTION:

3. (a) Make up a problem using weight, mass and force of gravitation on the Moon.

PROBLEM:

(b) Now solve your problem.

SOLUTION:

FIFTH DAY

Let's review the ideas about force of gravitation, weight and mass. Complete the following questions on page 98 of Concepts in Science 5.

Before You Go On - Write only the answers.

1. _____

2. _____

3. _____

4. _____

Using What You Know

2. _____

Read the following conversation. Then on the lines below the conversation, explain what Jim meant by his comment.

Mother: I have been gaining so much weight, I think I will have to start dieting.

Father: Well, if you want to weigh less you ought to go to the Moon.

Jim: Right, Mom! On the Moon you would weigh less, but you would not be any slimmer.

LESSON RECORD FORM

0504 Science
Unit III

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Signature

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Assignment
Code: _____

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Lesson Grading
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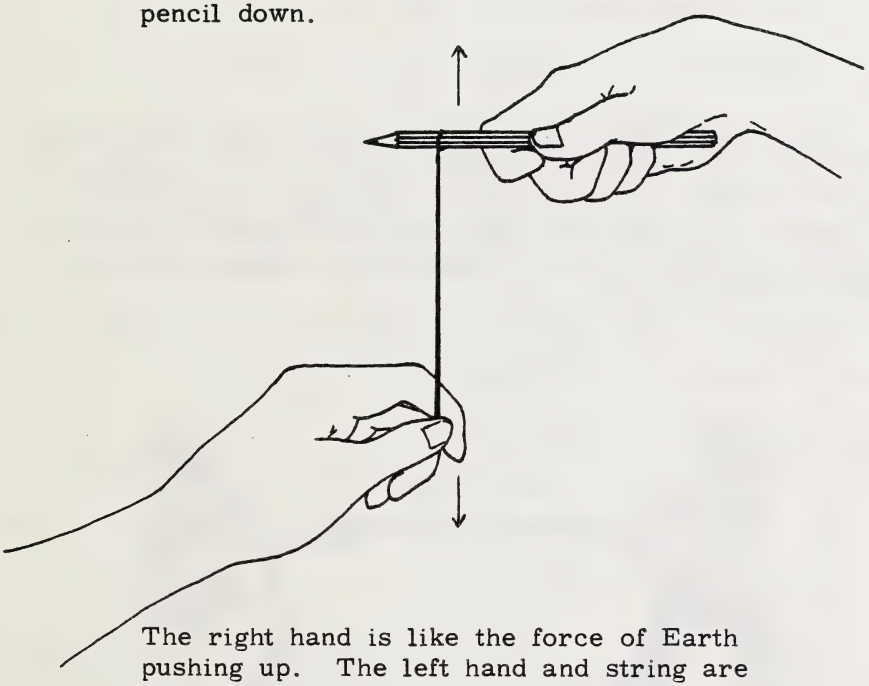
FIRST DAY

Last week you learned about a force that pulls you to Earth. This is the force of gravitation. This force prevents objects on Earth from floating away. Perhaps you are wondering why objects on Earth are not pulled into the ground by force of gravitation.

At the same time as objects are being pulled down, Earth is *pushing* up against them as well. These pushing and pulling forces are special kinds, as you shall see. The diagram below may help you understand this push and pull.

The right hand pushes the pencil up. The left hand pulls on the string which pulls the pencil down.



The right hand is like the force of Earth pushing up. The left hand and string are like the force of gravitation pulling down.

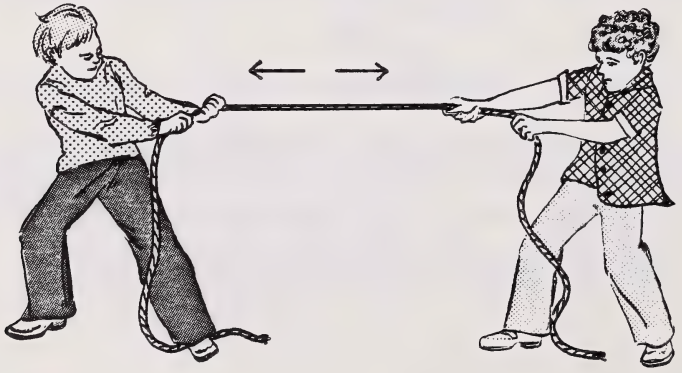
Will the pencil move?

If the right hand pushes up as hard as the left hand pulls down, the pencil will not move. The pencil will remain still because the pulling and pushing forces are equal. These equal forces are called BALANCED FORCES.

On Earth if the *force* of gravitation is *equal* to the Earth's pushing *force,* objects on Earth will not move. This is called balanced forces.

When an object will not move, the pulling or pushing forces on the object are equal or BALANCED FORCES.

In the next diagram the two boys are using their pulling forces in a game of Tug-of-War. The boys are trying to pull each other across the line. The boys' pulling forces are equal. Do you think either boy will succeed in pulling the other across the line? Explain your answer on the lines on the next page.



SEND FOR CORRECTION

SECOND DAY

Last day you learned that when forces pulling or pushing on an object are equal, the object will not move. The two boys having a game of Tug-of-War, in last day's work, had the same pulling force. You say their forces were balanced.

> When forces are balanced objects do not move.

The boys will not be able to move each other.

How could we make one of the boys in the Tug-of-War game, move?

_____

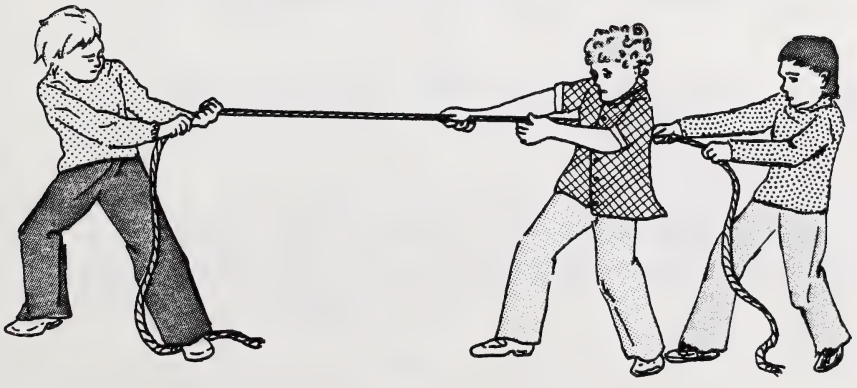
_____

_____

_____

_____

If you said you could put one more boy on one end, you're right.



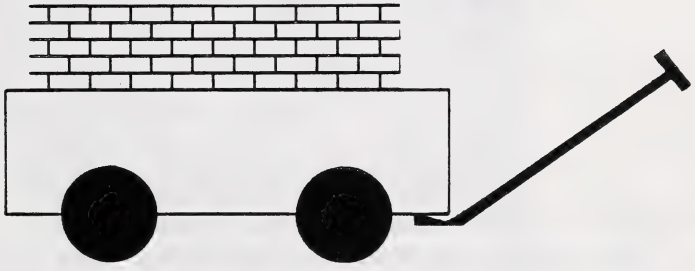
With one boy on one end and two boys on the other end, the pulling forces are no longer equal or balanced.

What do you think will happen when these boys try to pull each other across the line?

The side with two boys will pull the one boy across the line. The force of the two boys will overcome the force of the one boy. Notice that there was *movement* when the forces were not balanced.

THIRD DAY

Let's look at still another example of unbalanced forces. Below is a wagon full of bricks. It is standing still. Since the wagon is standing still, we know that the force of gravitation and Earth's upward push on the wagon are balanced forces.



The forces on the wagon are equal or balanced. Now you could give the wagon a push, to get it moving. The force you must overcome is the force of gravity pulling on the wagon. Would this push have to be:

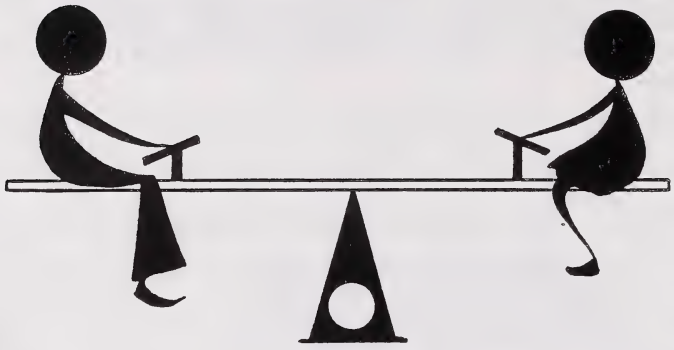
equal to or
greater than

the force of gravitation pulling on the wagon? _____

If you pushed the wagon with a force *equal* to the force of gravitation pulling on it, the wagon would not move.

The push on the wagon must *be greater than* the force of gravitation pulling on it. You must produce force which will overcome the force of gravitation pulling on the wagon. This is an unbalanced force.

Jim and Jan are on the teeter totter. The force of gravitation is pulling on both of them.



Jan gave a push to get the teeter totter moving, but it didn't move. Jim gave a push that did get the teeter totter moving.

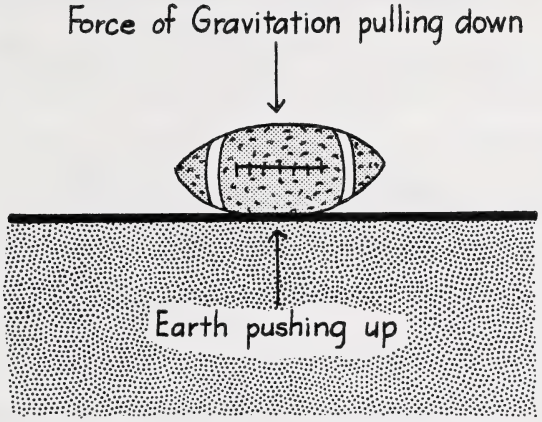
Underline the correct answer in the following.

a. Jan's push was (equal to, greater than) the force of gravitation. This means the force of Jan's push was (balanced, unbalanced) with the force of gravitation pulling on her. To get things moving a (balanced, unbalanced) force is needed.

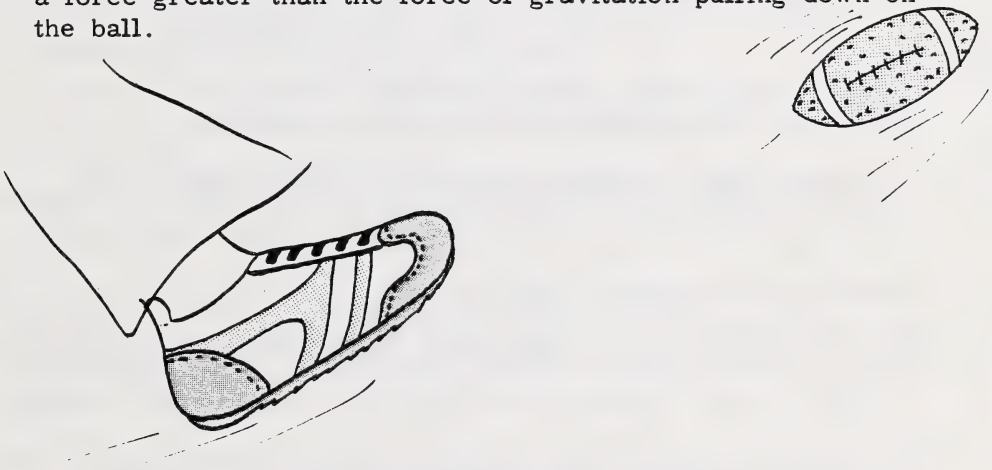
b. Jim's push was (equal to, greater than) the force of gravitation. This means the force of Jim's push was (balanced, unbalanced) with the force of gravitation pulling on him.

FOURTH DAY

When objects are not moving, balanced or equal forces are acting on them. The football below has equal or balanced forces acting on it.



To get the ball moving, an unbalanced force is needed – a force greater than the force of gravitation pulling down on the ball.



A swift kick with a foot will provide enough force to get the football moving.

Everytime a football player kicks or throws the football, he is overcoming the force of gravitation. Each time you and I walk, we are overcoming the force of gravitation.

Pick an object in your home that is not moving. Using the ideas of Earth's upward push and force of gravitation explain why the object is not moving.

Think of some object which is moving. Using the idea of unbalanced force explain why the object is moving.

SEND FOR CORRECTION

FIFTH DAY

When an object is resting or standing still, balanced (equal) forces are pushing or pulling on the object.

When an object is moving, unbalanced forces are pulling or pushing the object.

How Does a Rocket Leave Earth?

When a rocket is at rest, equal or balanced forces are pushing and pulling on the rocket. What kind of force is needed to get the rocket off the ground?

_____

The rocket needs an unbalanced force to leave Earth. The unbalanced force is greater than the force of gravitation holding the rocket to Earth.

Where does a rocket get that kind of force? The engines in the rocket have enough energy to overcome the Earth's gravitation. The special push that the rocket engines provide is called THRUST.

Imagine that just after blast-off, the rocket's engines all failed. They could no longer provide the special push, called THRUST. The rocket would fall back to Earth. Using the ideas of force of gravitation explain why the rocket would fall back.

_____

_____

_____

_____

_____

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LESSON RECORD FORM

0504 Science
Unit III

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Lesson Grading
Science: _____
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Date Lesson Received:

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ALBERTA DISTANCE LEARNING CENTRE

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St. Serv. 9-91

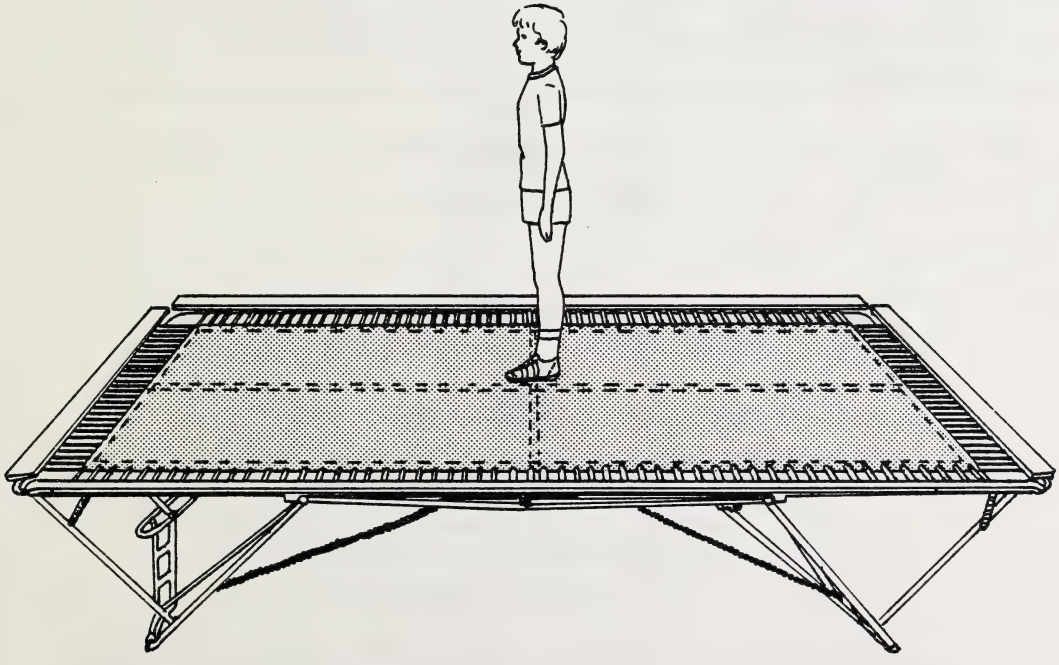
FIRST DAY

For objects to move there must be an unbalanced force. An unbalanced force is a pull or push *greater than* the force of gravitation pulling down on objects.

The engine of a rocket provided the push needed to overcome the force of gravitation on Earth. The engine provided the unbalanced force.

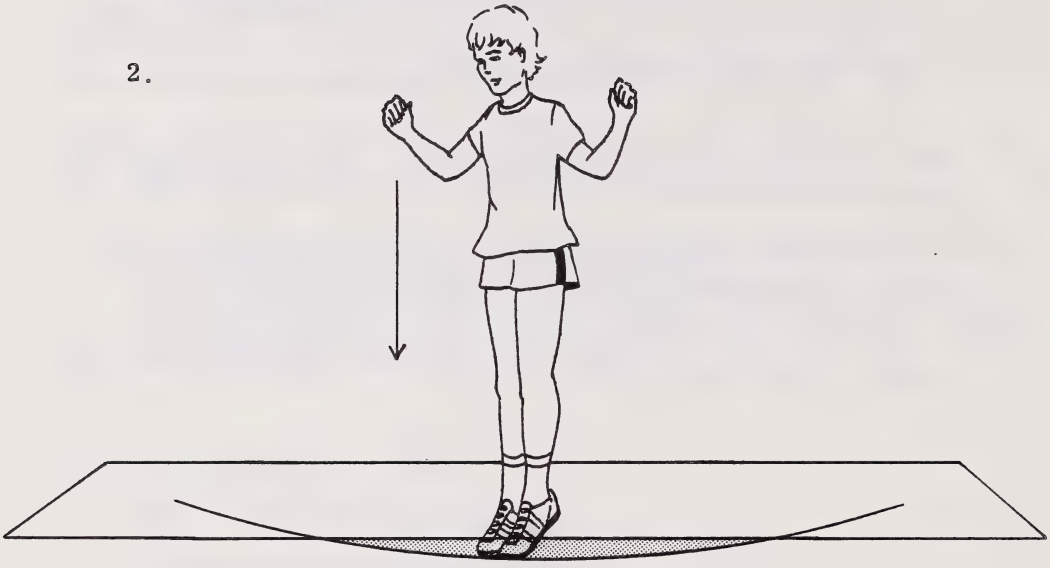
Let's have a closer look at this unbalanced force. We will try to understand more about unbalanced force.

To begin our understanding, let's look closely at the boy standing on the trampoline.



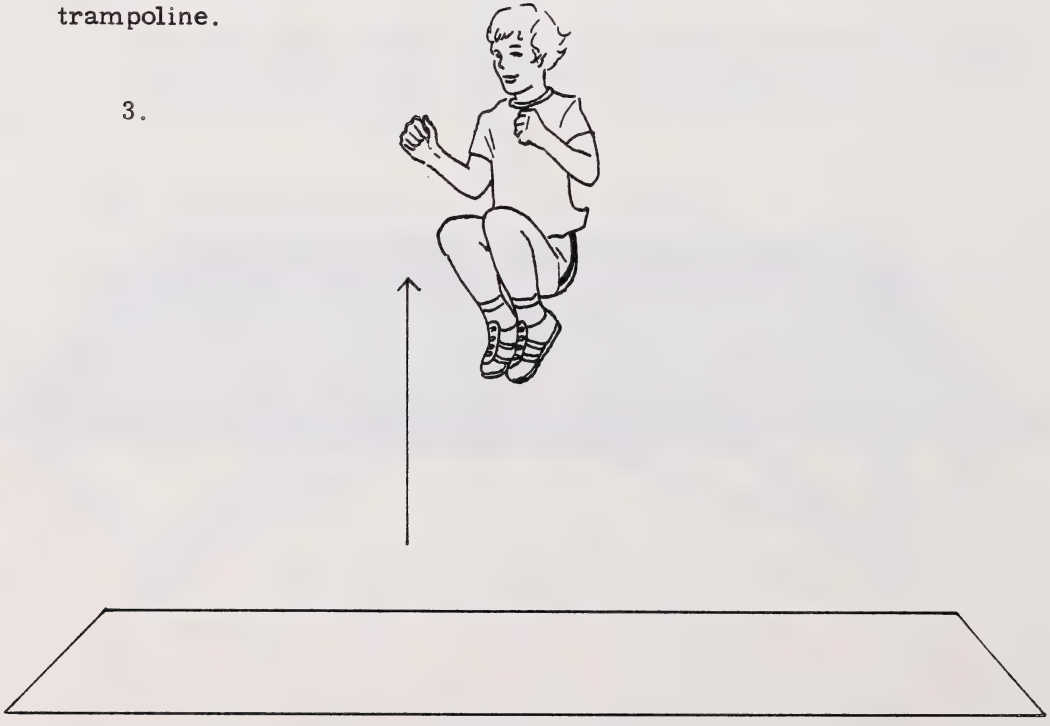
The boy will jump on the trampoline. When he jumps he will actually push the trampoline down.

2.



However, the trampoline will not remain pushed down. It pushes back up. When the trampoline pushes back up it really pushes the boy up, so that his feet leave the trampoline.

3.



Isaac Newton was a scientist who lived 300 years ago. If he were alive to explain this trampoline act, he would say:

> For every ACTION there is an EQUAL and OPPOSITE REACTION.

Look closely at diagram 2. Explain what you think the action is in the trampoline act.

Now look at diagram 3. Explain what the reaction is in this trampoline act.

I hope you said the following:

The ACTION: The boy pushed the trampoline down.

The REACTION: The trampoline pushed the boy up.

The trampoline went in one direction - down.
The boy went in the other direction - up.
Down is the opposite of up.

Mr. Newton said that for every action there was an equal and opposite reaction. We have seen the opposite action and reaction in the trampoline act on pages 1 and 2. Now what did Mr. Newton mean when he said that the action and reaction were equal? To answer this we must look at how much force the boy used to push the trampoline down. Let's imagine that he used 40 kilograms of force to push the trampoline. This was the action. If the reaction is equal to the action, how much force did the trampoline use to push the boy up?

The trampoline used _____ kilograms of force to push the boy up.

If you said 40 kilograms, you're right.

The force of the boy pushing down is equal to the force of the trampoline pushing up.

The trampoline and boy have helped us see that:

> For every action there is an equal and opposite reaction.

Complete the following.

1. Page 103, Concepts in Science 5, shows a picture of a boy on roller skates. He is holding a ball which he is about to throw. On the next page tell what will happen to the ball and to the boy when he throws the ball.

The boy will go in one direction and the ball will go in the opposite direction. As the boy pushes the ball away, the ball pushes the boy away. What is the action and reaction in this happening?

ACTION:

_____

_____

_____

_____

REACTION:

_____

_____

_____

_____

_____

SEND FOR CORRECTION

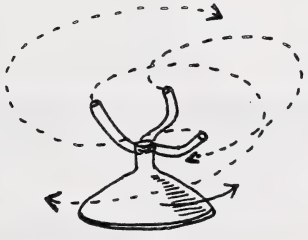
SECOND DAY

Let's do some more work with actions and reactions.

Remember: For every action there is an equal and opposite reaction.

Complete the following questions.

1. A lawn sprinkler throws water out in one direction. The sprinkler spins in the opposite direction.



Why does the sprinkler spin in the opposite direction?

_____

_____

_____

_____

_____

_____

ACTION:

_____

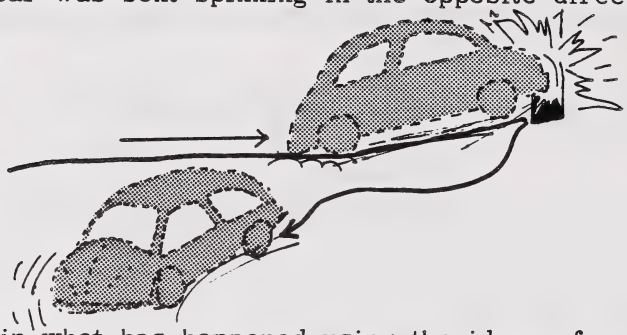
_____

REACTION:

_____

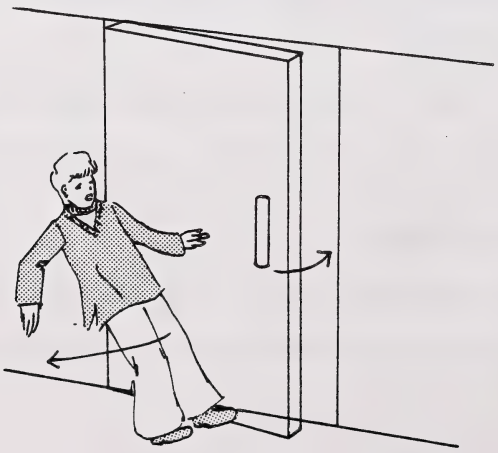
_____

2. A car travelling in one direction crashed into a pole. The car was sent spinning in the opposite direction.



Explain what has happened using the ideas of action and reaction.

3. Carl walked into a glass door. Carl was knocked backwards off his feet.



Explain what has happened using the ideas of action and reaction.

4. Think of some event that reminds you of an action and reaction. Describe the event to show the action and reaction.

THIRD DAY

1. You know that to get a rocket off the ground there must be a force that will overcome the pull of gravitation on the rocket. Such a force is called an unbalanced force.

2. For the first two days of this lesson, you have been learning about actions and reactions. This was to help you understand more about the unbalanced force which a rocket engine provides.

What connection is there between action - reaction and the unbalanced force provided by a rocket's engine? The picture of the rocket, page 104, Concepts in Science 5, may help you think of an answer. Write your ideas on the lines below.

The unbalanced force that the engine in a rocket provides is made up of an action and reaction.

ACTION: The engine helps force the hot gases away from the rocket, in one direction.

REACTION: The hot gases push the rocket in the opposite direction. This is called THRUST.

See picture, page 104,
Concepts in Science 5.

We can say that the unbalanced force needed to overcome the pull of gravitation is really the force of an action and reaction. The force of an action and reaction must be greater than the force of gravitation. What would happen to the rocket if the force of action and reaction was only *equal* to the pull of gravitation?

FOURTH DAY

Begin today's work by reading pages 99-104 in Concepts in Science 5. Then do the questions on page 105.

Before You Go On - Write the answers only.

1. _____
_____
_____

2. _____
_____
_____

3. _____
_____
_____

4. _____
_____
_____

SEND FOR CORRECTION

FIFTH DAY

Today you will review the ideas you read about and worked with for the last two lessons.

Explain what each of the following terms means. *You should use examples to help you in your explanation.* Try to do as much of this work as you possibly can without looking back at your notes.

1. Force of Gravitation

2. Balanced Forces

3. Unbalanced Forces

4. For every action there is an equal and opposite reaction.

SEND TODAY'S WORK FOR CORRECTION

LESSON RECORD FORM

0504 Science
Unit III

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St. Serv. 9-91

FIRST DAY

Isaac Newton is a very important man in science. He was a man who spent a great deal of time thinking about ordinary things; like apples falling from trees. He wanted to know why things happened as they did. As a result of his work and thinking, Mr. Newton has given many ideas which are used today.

In your last lesson you read:

> For every action there is an equal and opposite reaction.

This was Mr. Newton's idea about 300 years ago. You saw in your last lesson how this idea helps explain many everyday happenings. Mr. Newton's ideas are called scientific laws today. These scientific laws have been used to help make rockets and to get men into space.

One scientist will often build on the work of another scientist. Such was the case of Galileo and Newton. Their ideas are used by scientists to overcome problems in space flight. These ideas help us explain and understand things about a rocket's flight. What are the ideas Galileo and Newton worked on?

Galileo began with an idea we have all experienced:

Things at rest tend to remain at rest.

A chair, table and car, which are still, or *at rest,* tend to remain at rest. The chair, table and car will move only if a force of some kind moves them.

You and I, if sitting, tend to remain at rest in our chairs. We will move only if we use the force of our energy to move.

Name some things around you which are at rest and tend to stay at rest.

1. _____ 5. _____

2. _____ 6. _____

3. _____ 7. _____

4. _____ 8. _____

Things at rest tend to stay at rest. This idea has been accepted for thousands of years.

Galileo took this idea which we all have experienced, and added another idea to it. This idea was about movement.

Can you guess what that idea was?

_____

_____

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SECOND DAY

Things at rest tend to remain at rest.

Galileo took this idea and added another idea to it.

Things in motion tend to remain in motion.

Motion is movement. This means *moving things tend to keep on moving.* Now this idea is quite new. This fact has been known only about 400 years. What does it mean? If possible, try doing the following.

1. Find a place where you can run.
2. When your supervisor tells you to GO, start running. Run as fast as you can.
3. When your supervisor tells you to STOP, try to stop *right on the spot, without slowing down.* Watch what happens to your body movement when you stop this way.

Describe your body movement when you tried to stop on the spot.

_____

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If you managed to stop right on the spot, you probably felt your body jerk forward. Your arms may have flung forward. Perhaps you even had to take a few more steps forward, so you wouldn't lose your balance.

Why did your body react this way?

If we look at the new idea we'll find the answer.

> Things in motion tend to stay in motion.

Your body was moving because you were running. You told your legs to stop on the spot but the rest of your body and finally your legs, kept on moving. Moving things tend to keep on moving. Finally you were able to force your body to stop.

Have you ever noticed that a runner in a race will never stop right on the finish line? He knows his moving body will keep on moving. Instead, he slows down gradually and finally comes to a stop. By slowing down gradually he avoids a jerk and the possibility of stumbling over his feet.

Will a moving ball keep on moving? Yes, unless it is caught by someone or the ground stops it. If you could see a catcher catch a ball in slow motion, you would see that the catcher's arm and hand swing or jerk back. This is because the moving ball had the tendency to keep moving. It forced the arm and hand to swing or jerk back.

To answer the following questions use the idea that *things in motion tend to keep on moving.*

1. Explain why seat belts are used in cars.

_____

_____

_____

_____

_____

_____

_____

_____

2. Jan and some of her friends were swinging on the swings in a park. The girls decided they were going to jump from their swings, while swinging. They were going to try to land in a circle in front of the swings. If each girl could land in the circle and *not move* she was given one point. Jan was first. She jumped from her swing, landed in the circle and .....

   Tell what likely happened to Jan when she landed in the circle. Tell why this would happen. Is it likely any of the girls will get their points?

3. Perhaps you have had an experience where some moving object kept on moving and got you into trouble. For example: a baseball crashing into a house window. Tell about your experience with moving things.

SEND TODAY'S WORK FOR CORRECTION

THIRD DAY

Mr. Galileo put together the ideas you have read about for the last two days. He said:

> An object tends to remain at rest or tends to remain in motion because of its INERTIA (in ėr shə).

Inertia is the tendency or likelihood that objects at rest will stay at rest.

For Example:

> A plate on a table will not suddenly move off the table by itself. The plate resting on the table will likely remain resting on the table because of its inertia.

Inertia is the tendency (or likelihood) of objects in motion to keep on moving.

For Example:

> A ball flying through the air will not suddenly stop moving in mid-air. The moving ball will keep on moving because of its inertia.

A way in which to understand inertia is to think of how easy or difficult it would be to move an object that is resting. Think of how easy or difficult it would be to stop an object that is moving.

The mass of the object is important when thinking about how easy or how difficult it would be to move or stop an object. Remember that:

> Mass is the amount of material in an object.

The more mass or material an object has, the harder it would be to move or stop the object.

For Example:

A one tonne truck has a greater mass than a drinking glass.

If the truck and glass are at rest, it would be easier to move the drinking glass than to move the truck.

If the truck and glass are moving it would be easier to stop the glass than to stop the truck.

The greater the mass of an object, the harder it would be to move or stop the object. This means that the truck has a greater inertia or the truck has a greater tendency or likelihood to remain at rest or in motion.

Complete the following.

1. A steel marble and a glass marble are resting on a table. The mass of the steel marble is greater than the mass of the glass marble.

   Which marble would be easier, or is more likely, to move?

   _____

   Which marble has the greater tendency to remain at rest?

   _____

   This means the _____ marble has the greater inertia.

2. A beachball and a baseball are flying through the air. The baseball has a mass greater than the beachball.

   Which ball would be harder to stop? _____

   Which ball has the greater tendency to remain in motion?

   _____

   This means the _____ has the greater inertia.

SEND FOR CORRECTION

FOURTH DAY

Mr. Newton worked with Mr. Galileo's ideas. After doing further investigations Mr. Newton concluded:

> An object at rest remains at rest, and an object in motion continues in motion in a straight line unless acted upon by an unbalanced force.

This idea has come to be known as a LAW OF MOTION or LAW OF INERTIA. This law has helped scientists put rockets and men into space. We will use this law to help us understand more about the rocket on the launching pad and the rocket in flight. First, however, let's review some of the forces you know are at work when a rocket takes off from its launching pad. You may follow the diagram on page 12 as your supervisor reads the following to you.

1. At A the force of gravitation holds the rocket to the launching pad. An *unbalanced force* or *a force greater than the pull of gravitation* is needed to overcome the gravitation's hold on the rocket. The blast of hot burning fuel provides the unbalanced force needed to push the rocket off the launching pad.

2. Numbers 1, 2, and 3 show the 3 stages of the rocket which contain fuel. The 3 stages burn their fuel, one after the other. It is the burning fuel which gets the rocket off the launching pad and provides the rocket with enough *thrust* to keep travelling at tremendous speeds. This thrust is the *action* and *reaction* you read about earlier.

ACTION: The 3 rocket stages force burning fuel away from the rocket.

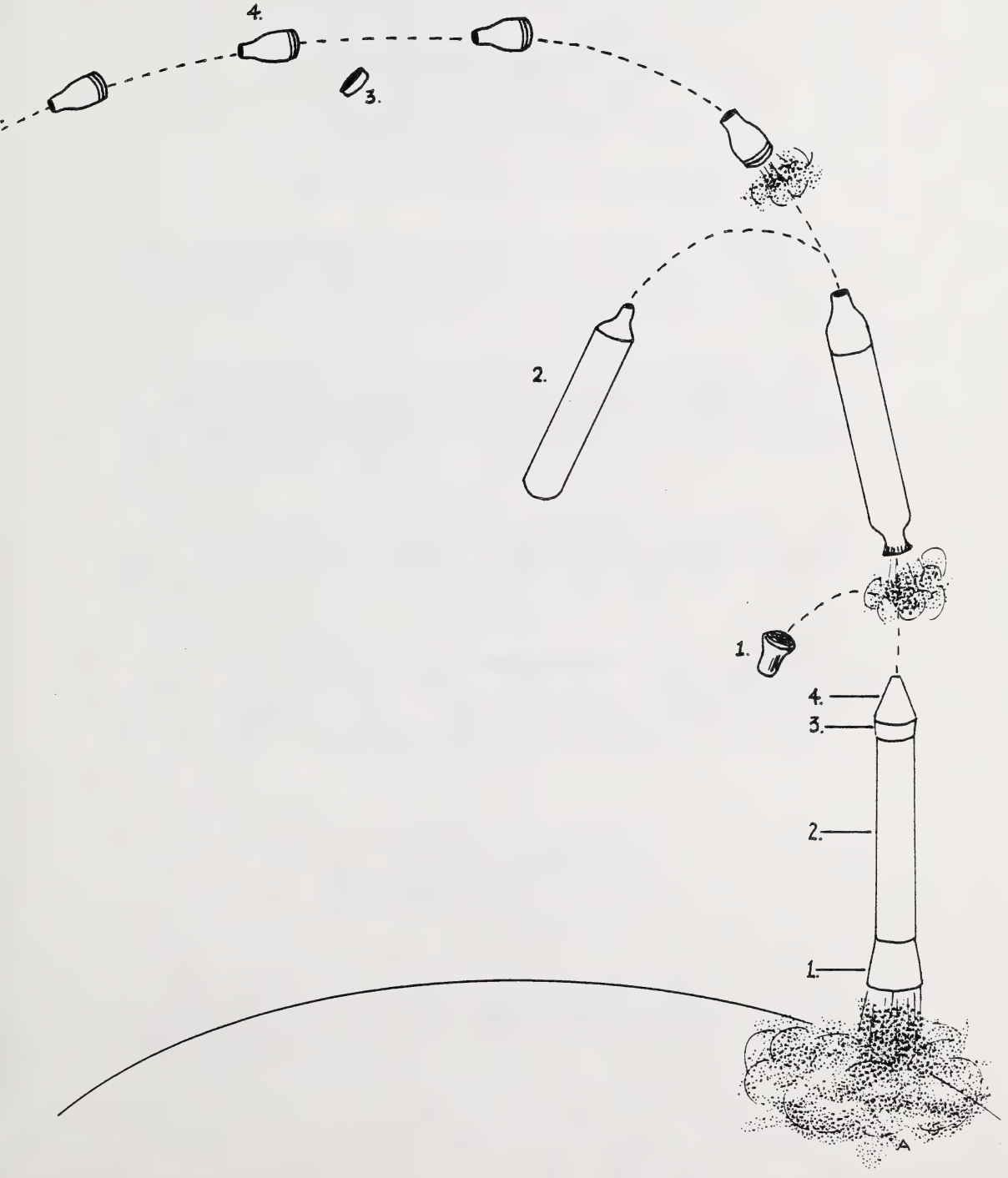
REACTION: The burning fuel forces the rocket away.

After each of the 3 stages has burned its fuel, it drops off to make the rocket weigh less.

3. Number 4 shows the 4th stage of the rocket. The fourth stage called the CAPSULE is where you find the astronauts and the instruments for flight.

4. Number 5 shows the capsule as it continues around Earth, in a *curving* path. This curving part around Earth is called the capsule's *orbit*.

These, then, are some of the forces involved in hurling a rocket into space. Next day, you will see how the Law of Motion helps to explain more about a rocket's flight.


4.
3.
2.
1.
4.
3.
2.
1.
A

FIFTH DAY

Mr. Newton's Law of Motion states that:

> An object at rest remains at rest, and an object in motion continues in motion in a straight line, unless acted on by an unbalanced force.

Let's use this law to understand more about a rocket's flight. Remember the first part of the law: an object at rest remains at rest and an object in motion continues in motion.

A rocket at rest on a launching pad remains at rest on the launching pad because of its inertia. The only way the rocket will leave the pad is if there is a force to overcome the pull of Earth.

Out in space a moving rocket will keep on moving even when its engine has stopped. The rocket's inertia keeps it going.

Now the Law of Motion states that an object in motion continues in a *straight* line. The path or orbit of a moving rocket, however, *curves* around the Earth. How can this be explained? You must look at the last part of the law.

> ....continues in a straight line *unless acted upon by an unbalanced force.*

What force out in space could pull the heavy capsule from its *straight* path and make it take a curving orbit around Earth?

Again Mr. Newton will help you understand. An apple or any object falls because of Earth's force of gravitation. Mr. Newton knew this. However, he began to wonder if the force of gravitation reached beyond Earth. We can imagine that Mr. Newton's thinking was like this:

> If gravitation pulls between Earth and an apple, perhaps gravitation pulls between Earth and Moon. Perhaps gravitation pulls between Earth and Sun, and between the Sun and all other planets. Perhaps the force of gravitation is present everywhere in the universe.

Mr. Newton's thinking was not popular during his time. People did not believe Mr. Newton's ideas were possible. However, by using mathematics Mr. Newton showed that the Moon, Sun and planets do act as if gravitation was pulling them. He showed that the Moon follows a curving path around Earth because Earth's force of gravitation pulls the Moon. He showed that all the planets follow a curving path because of the force of gravitation from the Sun. Mr. Newton concluded that gravitation is everywhere.

Today, Mr. Newton's theory has been tested and investigated. There is strong evidence that his ideas are correct – *gravitation is everywhere.* This idea is now called Newton's LAW OF UNIVERSAL GRAVITATION. This law states:

> All bodies in space pull on each other with a force called gravitation.

You have read about Mr. Newton's Law of Universal Gravitation, to help explain what force could pull a capsule from its *straight* path, and make it take a *curving* orbit around Earth. On the lines on the next page explain what force is pulling on the capsule making it orbit around Earth.

What force holds a capsule in an orbit around Earth? Mr. Newton said an unbalanced force could take an object off a straight path. Gravitation is the unbalanced force that pulls the capsule from a straight path and makes it take on orbit around Earth.

1. Complete the paragraphs below with the following words. The words may be used more than once.

inertia	straight	remain
unbalanced	curving	gravitation
force	orbit	kicking
moving	Earth's	pull

A body at rest tends to _____ at rest, because of its _____. A body in motion tends to _____ in motion because of its _____. A ball resting on the floor will remain at rest until an _____ force overcomes the pull of _____ on the ball. Someone _____ the ball would

provide the unbalanced _____ needed to make the ball move. Once the ball is moving it will tend to keep on _____ in a _____ line. An _____ force is needed to take the ball off its straight moving path. Someone kicking the moving ball would provide the unbalanced _____ needed, to move the ball on to another path.

In space, a rocket will move in a _____ path until an _____ force acts on it. The _____ force that takes a rocket off its straight path is _____ force of _____.

All bodies in space have a path called an _____ because of the _____ of gravitation. An orbit is a _____ path.

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LESSON RECORD FORM

0504 Science
Unit III

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Lesson Grading
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FIRST DAY

For the last few weeks you have read about forces on Earth. Perhaps you have wondered how Earth began. There are many *theories* which try to explain how Earth, the Moon and universe began. A theory is an idea, based on observations and reasoning. A theory requires many more years of testing and investigation before it can be accepted as a fact.

> A theory is a *possible* explanation for some event around us.

Theories are interesting to read about. In your text, Concepts in Science 5, you may read some theories. These theories try to explain how Earth, the Moon and the universe might have begun.

Read: Concepts in Science 5

A Cloud of Gas, pages 113-115

Moon in Orbit, page 119

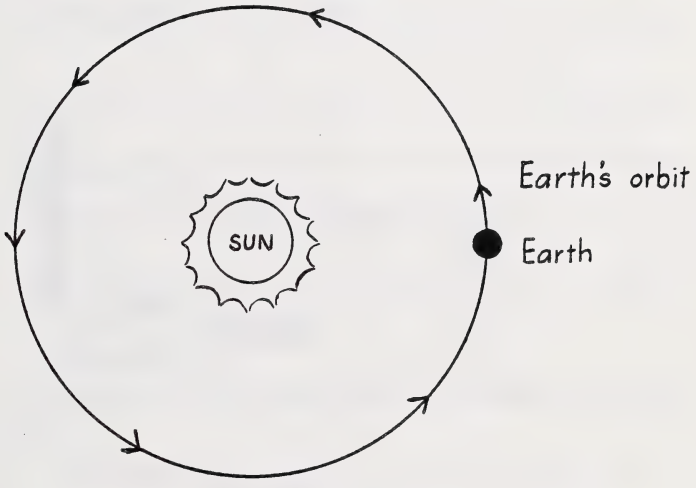
Birth of the Moon, pages 120, 121

SECOND DAY

Last day you read some theories about how Earth and the Moon began. These theories are ideas which still require much testing before they can be accepted as facts.

Perhaps as you were reading, you thought of Earth as a spaceship. Earth certainly is in space, and it is following a curving path called an orbit. Earth's path or orbit goes around the Sun. Have you ever wondered about the shape of this orbit? Perhaps you have been thinking that the shape of Earth's orbit is circular, as in the diagram below.

Is this your idea?



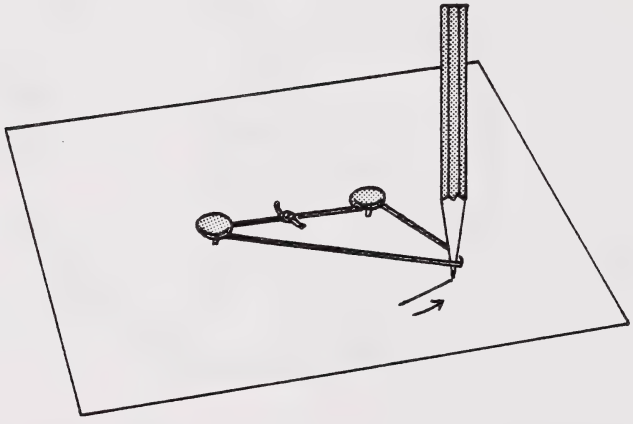
Earth's orbit is not a circle. Earth's orbit has the shape of an *ellipse* (i lips). Do the following investigation to help you discover and describe the shape of Earth's orbit and ellipse.

PROBLEM: To describe the shape of Earth's orbit

MATERIAL: piece of string, 31 cm long, 2 thumbtacks, a pencil, paper (provided on page 5), a piece of cardboard

PROCEDURE:

1. Place the piece of paper on top of the cardboard.
2. Press the thumbtacks into the paper-cardboard 7.5 cm apart.
3. Tie the ends of the string to make a loop.
4. Place the loop around the tacks.
5. With a pencil inside the loop, tighten the string. (See Diagram below.)
6. Keeping the string tight, move the pencil point around the thumbtacks until the starting place is reached.



7. Measure the ellipse from top to bottom. Record your measurement under the drawing you did on page 5.
8. Measure the ellipse exactly from side to side. Record your measurement under the drawing of the ellipse.

RESULTS: SEND THE ELLIPSE YOU DREW FOR CORRECTION.

CONCLUSION: The shape you have drawn is not a circle. How do you know this?

The shape you have drawn is an ellipse. It is the shape of Earth's orbit around the Sun. In your own words describe the shape of the ellipse.

What force between the Sun and Earth is pulling the Earth around in an ellipse?

SEND TODAY'S WORK FOR CORRECTION

An Ellipse

Measurements

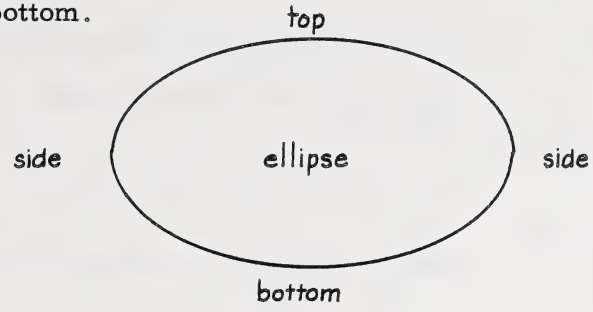
Top to bottom _____ cm

Side to side _____ cm

SEND FOR CORRECTION

THIRD DAY

The shape of Earth's orbit around the Sun is an ellipse. An ellipse is often called a flattened circle. The distance from side to side of an ellipse is greater than the distance from top to bottom.



What would you say the shape of the Moon's orbit is?

_____

_____

Let's test your idea.

PROBLEM: To describe the shape of the Moon's orbit

MATERIAL: 2 thumbtacks, string 31 cm long, a pencil, piece of paper (provided at end of today's work - page 8), cardboard

PROCEDURE:

1. Place the paper on the cardboard.
2. Press the tacks, into the paper and cardboard. (10 cm apart)
3. Tie the ends of the string to form a loop.
4. Place the loop around the tacks.
5. With a pencil inside the loop tighten the string.
6. Keeping the string tight, move the pencil point around the thumbtacks until the starting place is reached.

RESULT: SEND YOUR DRAWING FOR CORRECTION

CONCLUSION: What is the shape of the Moon's orbit?

_____

_____

_____

How could you check to make sure it is an ellipse?

_____

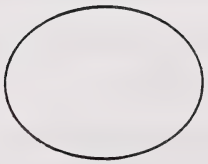
_____

SEND FOR CORRECTION

The shape of Earth's orbit and the Moon's orbit is an ellipse. In fact the shape of the orbit of every planet in our solar system is an ellipse.

The shape of an ellipse can vary from an extreme ellipse as:

to a very slight ellipse as:



The Shape of the Moon's Orbit

SEND FOR CORRECTION

Something for You to Do on Your Own

Using the same materials as you did for today's investigation:

try varying the distance between the tacks.
try different lengths of string.

What did you discover about the shape of the ellipse when you varied the distance between tacks and the length of the string?

_____

_____

_____

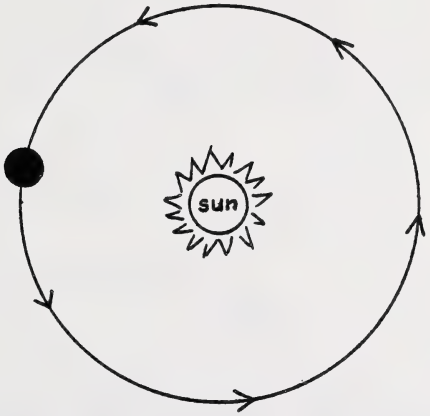
_____

_____

_____

FOURTH DAY

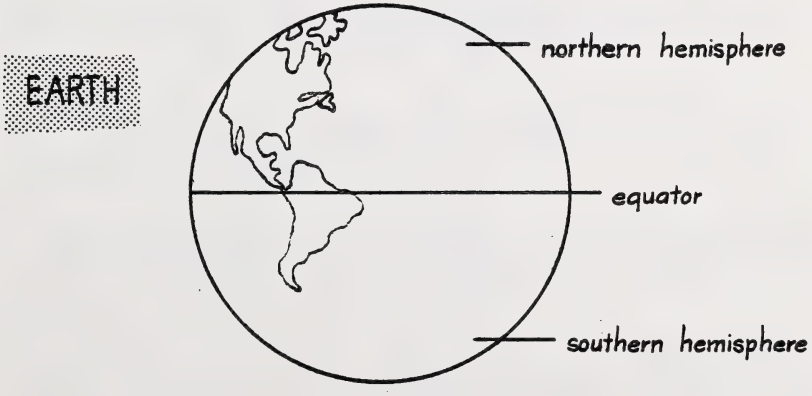
The shape of Earth's orbit around the Sun is an ellipse. It takes Earth $365\frac{1}{4}$ days to go around the sun once. No doubt you recognize $365\frac{1}{4}$ days as one year. This complete trip around the Sun is called a REVOLUTION (rev ə lü, shən). It takes one year for Earth to revolve around the Sun.



Earth revolving around on its elliptical orbit around the sun.

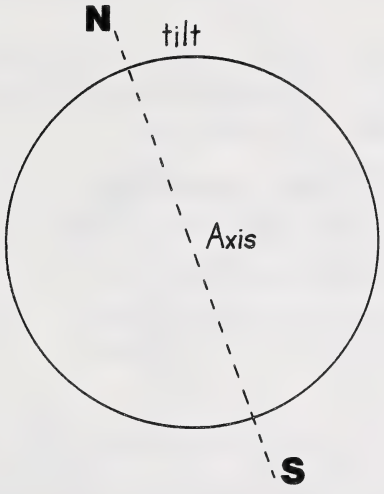
Without this revolution there would be no seasons. Next day you will do an investigation to help you understand why this is true. First, you must understand two more ideas about Earth.

1. Our Earth is divided into two imaginary halves at the equator. The halves are called HEMISPHERES (hem ə sfēr). There is a *northern* hemisphere and a *southern* hemisphere.



Canadians live in the northern hemisphere.

2. Earth has an imaginary line running through it. We call this line *Earth's Axis*. This line or axis is tilted so it points to the North Star.



The Earth's axis always points towards the north.*

In the northern hemisphere this axis is called north (N). In the southern hemisphere this axis is called south (S).

The revolution of Earth and the tilt of Earth on its axis will help you understand why there are seasons.

Study the diagram on page 13 as your supervisor reads the following.

1. On the diagram, find the following directions North - N, South - S, East - E, West - W.

2. Find Earth's axis. It is pointing north. As you follow the Earth around the Sun, you will see that the axis always points north.

3. Find December 21. Earth's axis is pointing toward the north. This means Earth's axis and the whole northern hemisphere is leaning *away* from the Sun.

4. Find March 21. Notice that the axis is still pointing north, however Earth has moved further around the Sun. Therefore, the northern hemisphere is leaning a little more toward the Sun.

*The Sun's rays do not fall directly on the northern hemisphere. Less Sun is received in the northern hemisphere.

5. Find June 21. Notice that the axis is still pointing north. However, Earth has moved still further around the Sun. The northern hemisphere is leaning right toward the Sun.*

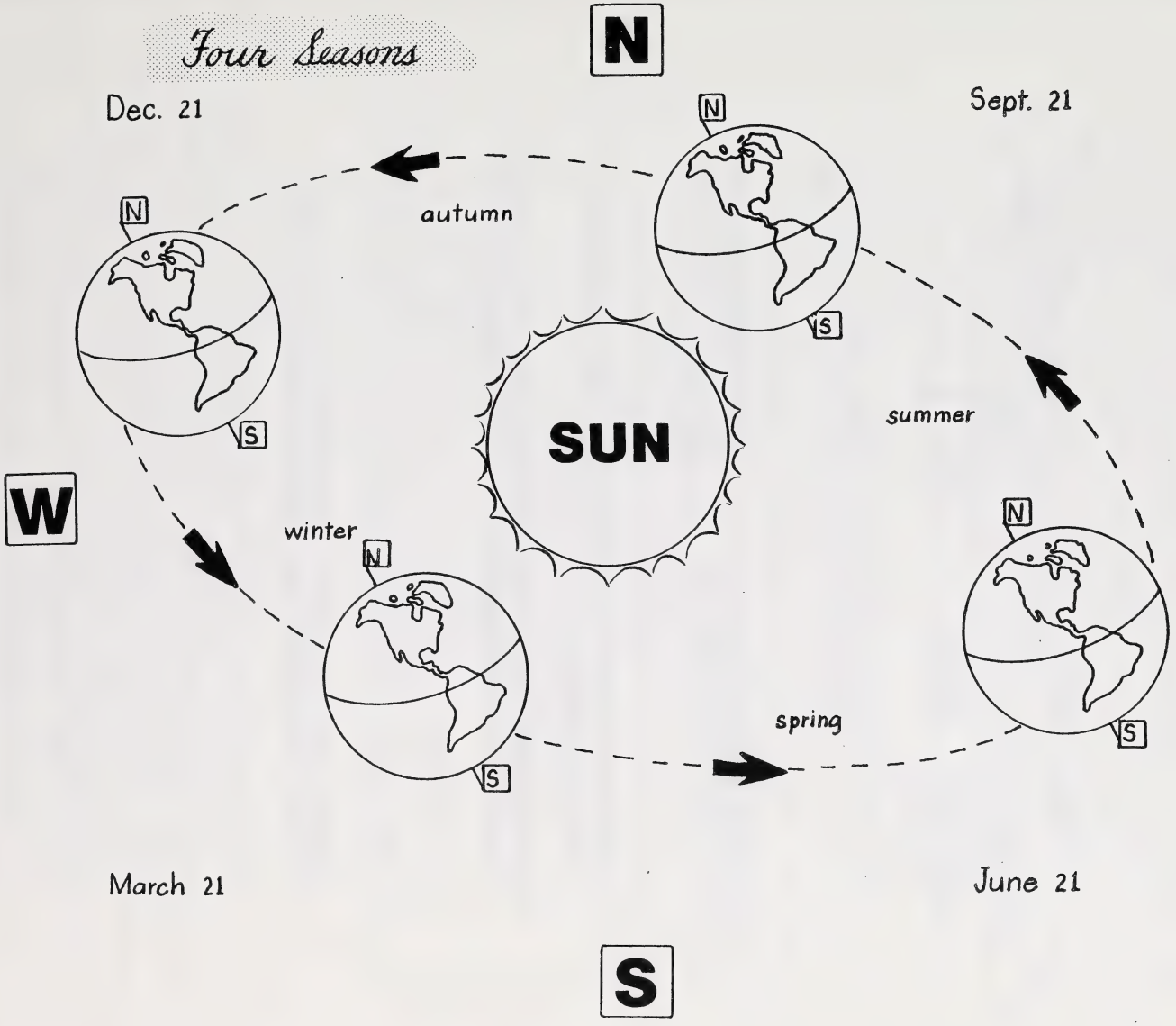
6. Find September 21. Notice that the axis of Earth is still pointing north. The northern hemisphere is now starting to lean away from the Sun.

Finally Earth reaches the same position it was in one year ago. It has made one revolution around the Sun. On Earth, in the northern hemisphere, four seasons have been experienced.

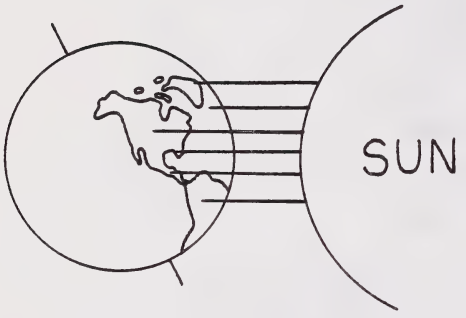
On the diagram you noticed December 21, June 21, September 21 and March 21. The furthest the northern axis will be from the Sun is on December 21. The closest the northern axis will be to the Sun is on June 21. The position of the axis on March 21 and September 21 is half way between the furthest and closest position to the Sun.

*The Sun's rays are falling almost directly on the northern hemisphere. In the northern hemisphere more of the Sun is received at this time.

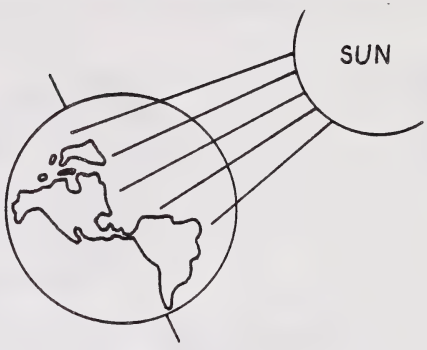
Four Seasons



During the day Earth is always receiving sunshine or sunlight. *It is the Sun which warms our Earth.* However at some times of the year the northern hemisphere receives *less of the Sun's warmth because the Sun's rays do not fall directly on the northern hemisphere.*



Sun's rays falling *directly* on the northern hemisphere



Sun's rays falling *less* directly on the northern hemisphere

Using the diagram on the previous page, answer the following questions.

1. At what time of the year does the northern hemisphere receive the least amount of the Sun's warmth?

_____

_____

Explain why the northern hemisphere receives less of the Sun's warmth at that time of the year.

_____

_____

_____

_____

_____

_____

_____

_____

2. At what time of the year does the northern hemisphere receive the most warmth from the Sun?

Explain why the northern hemisphere receives more of the Sun's warmth at this time of the year.

3. What is happening to the amount of warmth from the Sun that the northern hemisphere receives as winter turns into spring?

Explain why Earth receives more warmth from the Sun at this time.

4. What is happening to the amount of warmth from the Sun that the northern hemisphere is receiving as summer turns into autumn?

Explain why the northern hemisphere receives less of the Sun's warmth as autumn approaches.

5. In your own words, explain what causes the four seasons that occur in the northern hemisphere.

SEND TODAY'S WORK FOR CORRECTION

FIFTH DAY

In the northern hemisphere there are four seasons. At certain times of the year, the northern hemisphere receives less warmth from the Sun. This is because Earth's axis and the northern hemisphere lean away from the Sun. This is winter time in the northern hemisphere. Gradually as Earth revolves around the Sun, the northern hemisphere leans toward the Sun. Spring passes into summer. As the Earth continues its revolution the northern hemisphere begins to lean away from the Sun. There is less warmth and the days become cooler in the northern hemisphere.

You can build a model to help you see these changes.

PROBLEM: To build a model that will help us understand why the northern hemisphere receives different amounts of the Sun's warmth at different seasons of the year.

MATERIAL: an object which can represent Earth – an orange, a tennis ball, or a globe, two stick pins, a felt marker, one lamp without the shade to represent the Sun, a dark room – the darker the better

PROCEDURE:

1. Stick the two pins into the top and bottom of the "Earth" you are using. The two pins represent the Earth's axis.

2. With a marker, draw an equator around the middle of "Earth". This will divide Earth into the northern and southern hemispheres.

3. Choose a spot in the room which you will call north.

4. You may hold the lamp in the middle of the room. All lights, except for the lamp, should be off.

5. Ask your supervisor to walk around "the Sun", holding the "Earth" so that the axis points to the north.

   For the remainder of this investigation Earth's axis must point north.

6. As your supervisor continues to walk the "Earth" around the "Sun", watch for the following:

   - the amount of light that falls on the northern hemisphere when Earth is in different places in the revolution.

7. Ask your supervisor to make a second revolution with "Earth".

8. Tell your supervisor when you think each of the four seasons is beginning as "Earth" revolves around the "Sun".

RESULTS: When did the northern hemisphere receive the most light?

When did the northern hemisphere receive the least light?

CONCLUSION: Why does the northern hemisphere receive different amounts of the Sun's warmth at different times of the year?

SEND FOR CORRECTION

Something for You to Do on Your Own

In the winter months, the Sun's rays fall less directly on the northern hemisphere. This means the days are cooler with less of the Sun's warmth. What do you think is happening in the southern hemisphere. Are the days warmer or cooler at this time? Why do you think as you do? Do you think lands around the equator are affected by Earth's revolution around the Sun? Why do you think as you do? You may wish to repeat today's investigation to help you answer these questions.

LESSON RECORD FORM

0504 Science
Unit III

Parent's or Supervisor's Comments:

For School Use Only

Assigned
Teacher: _____

Assignment
Code: _____

Graded by: _____

Lesson Grading
Science: _____
Health: _____
Neatness: _____

Date Lesson Received:

_____

Lesson Recorded: _____

_____
Signature

For Student Use

(If label is missing or incorrect)

File Number:

_____

Lesson Number: _____

Date Lesson Submitted:

_____

Grading Scale:

A - Very Satisfactory
B - Satisfactory
C - Weak
D - Unsatisfactory

Apply Lesson Label Here

Name _____
Address _____
Postal Code _____

Please verify that preprinted label is for correct course and lesson.

Teacher's Comments:

_____
Signature

Keep this sheet when returned - it is your report.

ALBERTA DISTANCE LEARNING CENTRE

MAILING INSTRUCTIONS FOR CORRESPONDENCE LESSONS

1. BEFORE MAILING YOUR LESSONS, PLEASE SEE THAT:

(1) All pages are numbered and in order, and no paper clips or staples are used.
(2) All exercises are completed. If not, explain why.
(3) Your work has been re-read to ensure accuracy in spelling and lesson details.
(4) The Lesson Record Form is filled out and the correct lesson label is attached.
(5) This mailing sheet is placed on the lesson.

2. POSTAGE REGULATIONS

Do **not** enclose letters with lessons.

Send all letters in a separate envelope.

3. POSTAGE RATES

First Class

Take your lesson to the Post Office and have it weighed. Attach sufficient postage and a green first-class sticker to the front of the envelope, and seal the envelope. Correspondence lessons will travel faster if first-class postage is used.

Try to mail each lesson as soon as it has been completed.

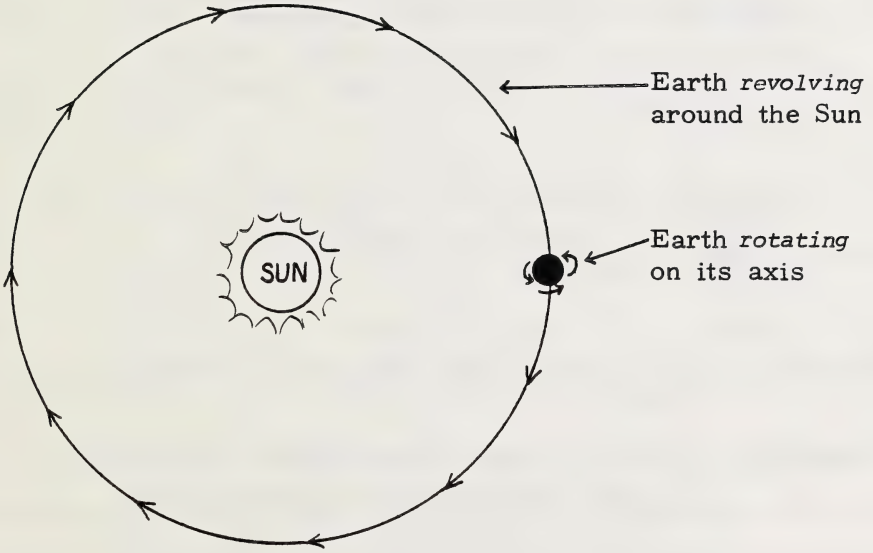
When you register for correspondence courses, you are expected to send lessons for correction regularly. Avoid sending more than two or three lessons in one subject at the same time.

St. Serv. 9-91

FIRST DAY

Last week you used a model of the Sun and Earth to help you understand how seasons changed in the northern hemisphere. These changes occur over one year of time.

There is another change that occurs on Earth. It is the night and day change of 24 hours. As Earth revolves around the Sun, it is also spinning on its axis from east to west. This spinning is called ROTATION (rō tā shun).



To help you understand this revolution and rotation do the following:

1. Hold a ball, or some fruit, in your hand. This will be Earth.

2. Pick some object in the room as the Sun.

3. Start to walk around the Sun with Earth in your hand.

4. As you walk around the Sun, turn Earth round and round in your hand.

Do you see that as Earth travels or revolves around the Sun, it also spins or rotates on its axis? _____

You are given a PROBLEM and the MATERIALS below, for an investigation into the rotation of Earth.

1. Read the PROBLEM and MATERIALS.
2. On the lines below PROCEDURE, tell of an investigation that you could do to solve the PROBLEM using the MATERIALS given. It might be a good idea to do a rough copy of your investigation before writing it under PROCEDURE.
3. If you can think of materials you would rather use, list them first, then go on telling how you would use them to solve the PROBLEM.

PROBLEM: To discover how night and day change on Earth

MATERIALS: lamplight (Sun), a ball (Earth), someone to hold the lamplight, someone to hold the ball, a dark room, felt pen to mark a spot on Earth where you can imagine that you live

REMEMBER: In your investigation, Earth must be rotating on its axis as it revolves around the Sun.

PROCEDURE: Number the steps to be followed here.

_____

_____

_____

_____

_____

_____

_____

SEND FOR CORRECTION

SECOND DAY

Last day you wrote the PROCEDURE of an investigation to discover how night and day change on Earth.

Today:

1. Gather all the materials needed for the investigation.
2. Carry out the instructions you wrote under PROCEDURES yesterday.
3. Complete this investigation by answering the following questions.

RESULTS: In the space below draw a diagram of the investigation you did. On your diagram:

1. show the position of Earth when it is day where you live. On the diagram write: Day where I live.
2. show the position of Earth when it is night where you live. On the diagram write: Night where I live.

You may use shading to show the night side of Earth.

CONCLUSION: Tell why there is night and day on Earth.

THIRD DAY

The Moon revolves around Earth. Earth revolves around the Sun while it also rotates on its axis. The Sun is not still either. The Sun has an orbit it follows while it rotates on its axis.

Find the following on page 8.

1. Earth *revolves* around the Sun from *west to east.*

2. *Earth rotates* on its axis from *east to west.*

3. The *Moon revolves* around Earth from *west to east.*

4. The *Sun* revolves from *east to west.*

5. The *Sun rotates* on its axis from *west to east.*

Build a model of the Sun, Moon and Earth as they revolve and rotate.

PROBLEM: To build a model that will help you see how the Sun, Moon and Earth revolve and rotate

MATERIAL: 3 balls, or 3 fruits of different sizes if possible, 3 people, a fairly large space to move about

PROCEDURE:

1. Give each person 1 ball or fruit.

   - The largest ball is the Sun.
   - The smallest ball is the Moon.
   - The medium size ball is Earth.

2. Decide which direction will be east and west in the room in which you're working.

3. The person with the largest ball or the Sun should stand in the centre of the room.

   - The Sun then begins a small orbit going from *east to west.*

   - At the same time, the person with the Sun, should make the Sun rotate in his hand from *west to east.*

4. The person with Earth – medium sized ball – should begin to revolve around the Sun from west to east.

   - At the same time the ball – Earth – should be rotated in the hand from east to west.

5. The person with the Moon should now begin to revolve around Earth from west to east.

RESULTS:

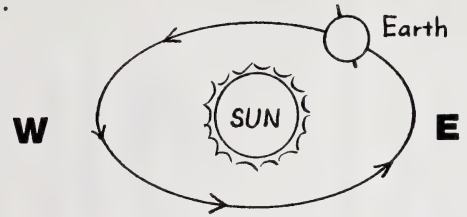
1. Draw a diagram in the space below showing the three orbits and the Sun, Moon and Earth.

2. With arrows show the direction in which the Sun, Moon and Earth were revolving.

3. With arrows show the direction that the Sun and Earth were rotating.

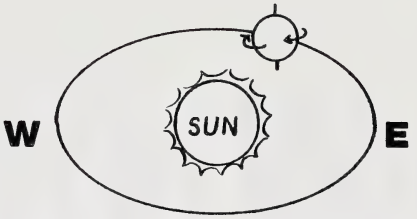
   You don't have to draw the people.

1.



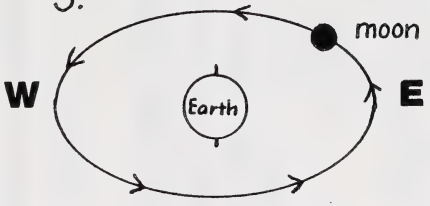
Earth revolves around the Sun from west to east.

2.



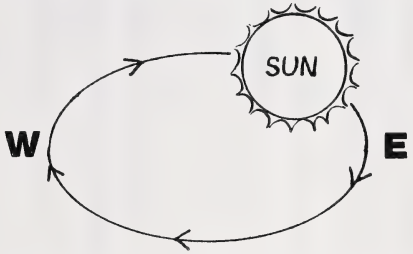
Earth rotates on its axis from east to west.

3.



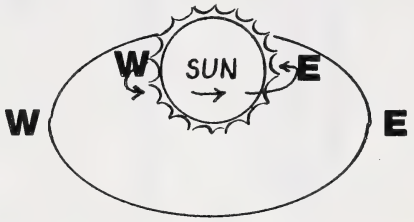
The Moon revolves around the Earth from west to east.

4.



The Sun revolves from east to west.

5.



The Sun rotates from west to east.

CONCLUSION: Did this model give you a better idea of how these bodies move in space?

_____

We see only one side of the Moon. After using this model try to explain why we see only one side of the Moon.

_____

_____

_____

_____

_____

_____

Did this model make you think of some questions that you would like to ask your teacher? If so, use the lines below for your questions.

_____

_____

_____

_____

_____

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SEND TODAY'S WORK FOR CORRECTION

FOURTH DAY

You know that it takes Earth one year to revolve on its orbit around the Sun. Every twenty-four hours Earth makes one complete rotation on its axis.

Earth is not the only planet that revolves and rotates around the Sun. All planets rotate on their axes and revolve around the Sun on their own orbits. See the diagram on page 12.

The following verse will help you remember the names of the planets that revolve around the Sun.

My Very Eyes May Just See

You Now Pluto

The underlined letter in each word is the first letter in the names of the planets starting with Mercury.

Many of these planets have SATELLITES (sat əl īts) revolving around them.

> SATELLITES are objects in space which revolve around another object in space.

Our planet Earth has one satellite. We call it the Moon. It takes the Moon 28 days or about one month to go around Earth. Earth has many man-made satellites, such as weather stations. These especially-made weather stations orbit around Earth sending back pictures and information about weather around the world.

Other planets with natural satellites are:

Planet	Satellites (or Moons)
Jupiter	12
Saturn	10
Uranus	5
Neptune	2
Mars	2

Mercury, Venus and Pluto have no satellites.

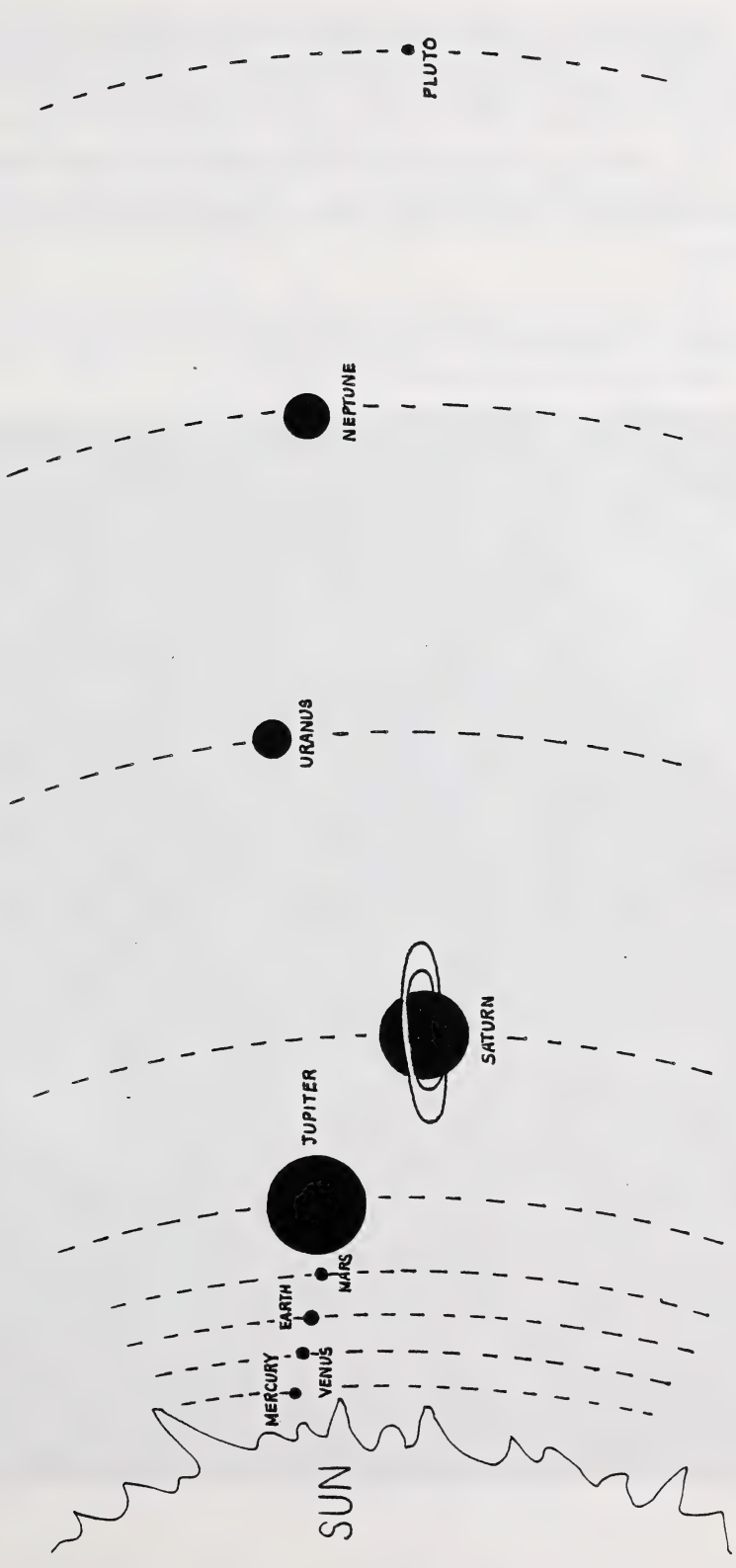
The planets revolve around the Sun. The Sun is not still. It has an orbit which it travels and it also rotates on its axis. The Sun is really a star. Sun is the name we give to this kind of star.

The Sun, planets with their satellites (moons), plus millions of other stars are all grouped together in a GALAXY (gal ək se). The name of our galaxy is the MILKY WAY. Try the following to give you an idea of what the MILKY WAY galaxy is like.

1. Put some water in a pan.
2. Sprinkle pepper on the water.
3. With your finger make the water swirl like a whirlpool. Some of the pepper will drop to the bottom of the pan.
4. Take your finger out.

Try to think of each speck of pepper as a star in our galaxy along with nine planets and the Sun. Watch as the stars spin around a center.

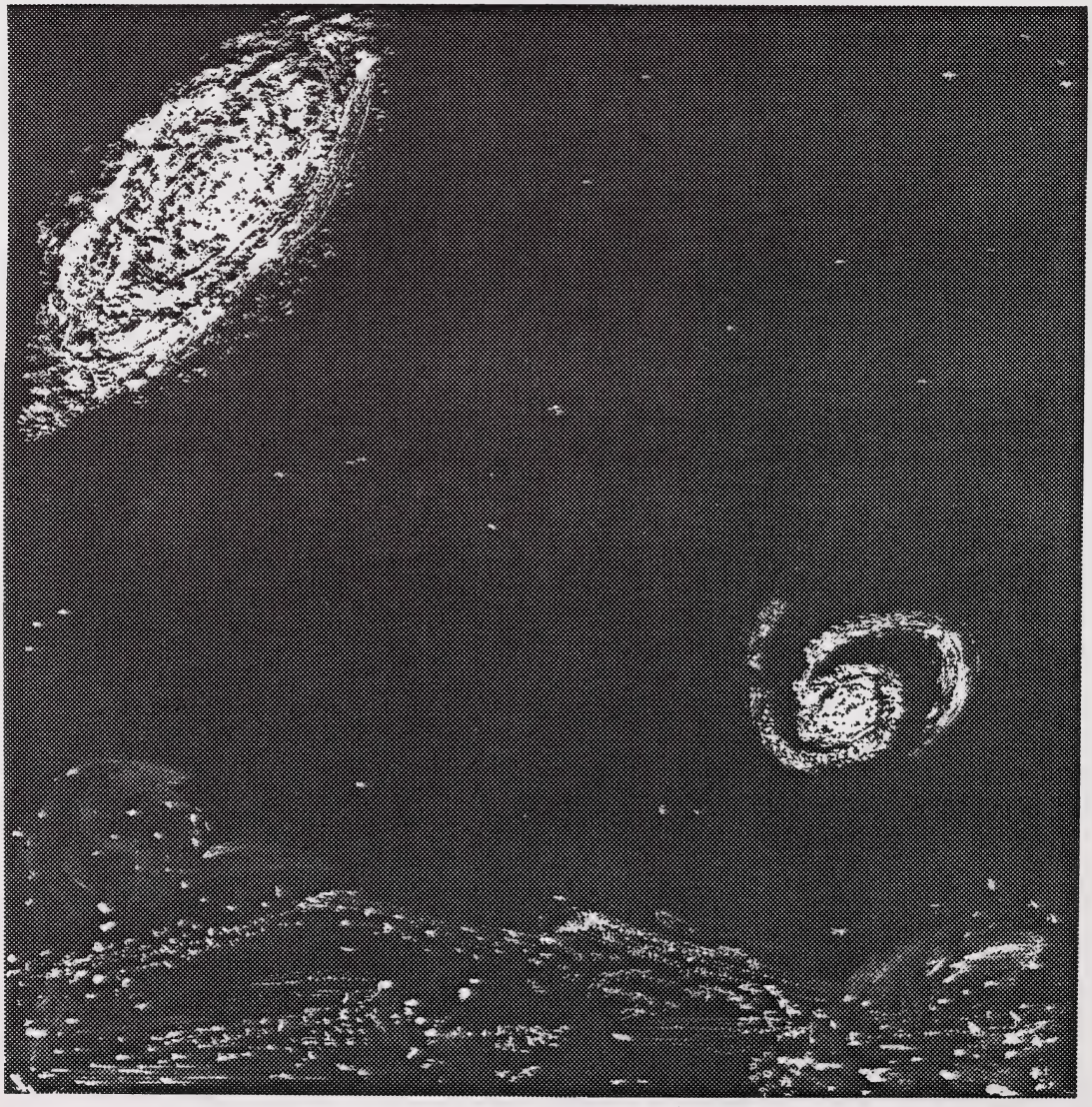
THE PLANETS AND THE SUN



Look at the picture on page 129 of Concepts in Science 5. This cloud of stars is spinning in space around a center much like the specks of pepper did. This is a galaxy.

The distance from the Sun to planets, or from planet to planet is *millions of kilometres*. For example, the distance from our planet Earth to the Sun is about 148,000,000 kilometres.

There are other groups of stars, planets and suns called galaxies. The distance from one galaxy to another is millions and millions and millions of kilometres.



Between galaxies are more stars which are not part of a galaxy. There are many, many galaxies and millions upon millions of stars. All these together make up the UNIVERSE (ū nə vėrs). The size of the universe is more than we can even begin to imagine.

If we had inter-galaxy mail delivery, our address might be:

Milky Way Galaxy
Planet Earth

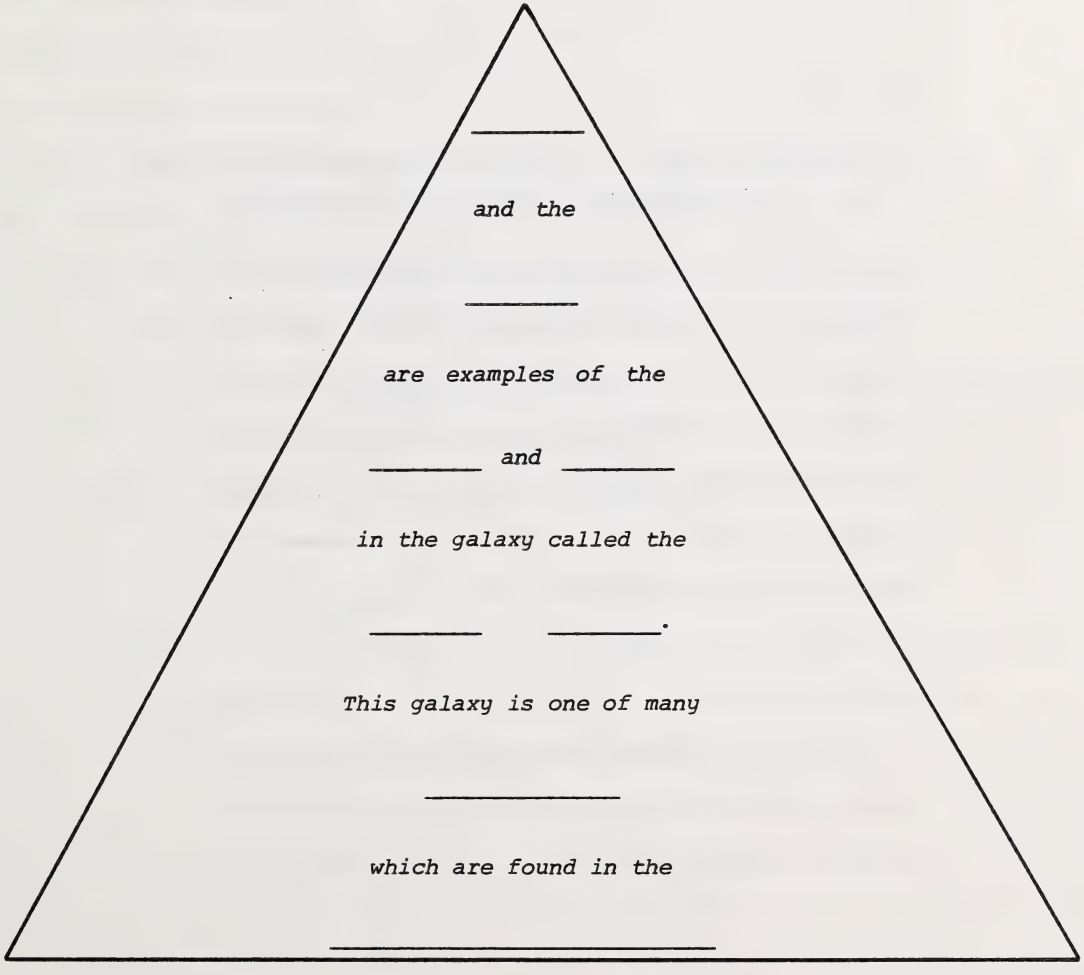
From here our postal system on Earth would get the mail to us.

FIFTH DAY

Today you will review the ideas you read about this past week.

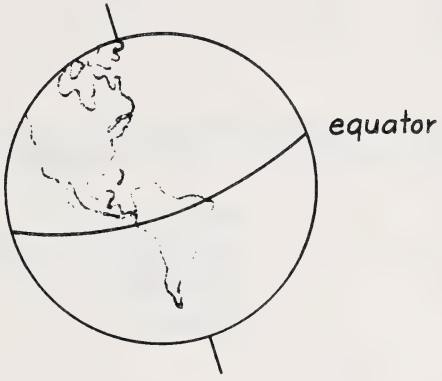
1. Build the Pyramid of the Universe by filling in the blanks with words from the list below. Some words may be used more than once.

EARTH STARS PLANETS
SUN MILKY WAY GALAXIES
UNIVERSE



2. On the lines below explain the different meanings of the words rotation and revolution as they were used in this science lesson.

3. On the diagram of Earth write *northern hemisphere* and *southern hemisphere*.

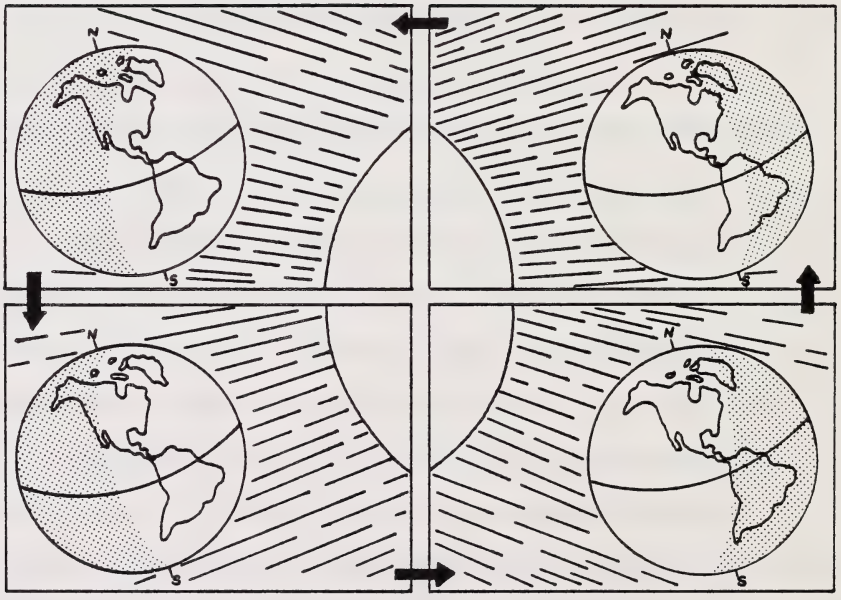


4. (a) On the diagram on page 17, what is happening to the seasons in the northern hemisphere?

(b) How can you tell that the seasons are changing?

(c) On the diagram below, write the following dates in the correct part of the diagram.

December 21
March 21
September 21
June 21



SEND TODAY'S WORK FOR CORRECTION

LESSON RECORD FORM

0504 Science
Unit III

Parent's or Supervisor's Comments:

For School Use Only

Assigned
Teacher: _____

Assignment
Code: _____

Graded by: _____

Lesson Grading
Science: _____
Health: _____
Neatness: _____

Date Lesson Received:

_____

Lesson Recorded: _____

_____
Signature

For Student Use

(If label is missing or incorrect)

File Number:

_____

Lesson Number: _____

Date Lesson Submitted:

_____

Apply Lesson Label Here

Name _____
Address _____
Postal Code _____

Please verify that preprinted label is for correct course and lesson.

Grading Scale:

A - Very Satisfactory
B - Satisfactory
C - Weak
D - Unsatisfactory

Teacher's Comments:

_____
Signature

Keep this sheet when returned - it is your report.

ALBERTA DISTANCE LEARNING CENTRE

MAILING INSTRUCTIONS FOR CORRESPONDENCE LESSONS

1. BEFORE MAILING YOUR LESSONS, PLEASE SEE THAT:

(1) All pages are numbered and in order, and no paper clips or staples are used.
(2) All exercises are completed. If not, explain why.
(3) Your work has been re-read to ensure accuracy in spelling and lesson details.
(4) The Lesson Record Form is filled out and the correct lesson label is attached.
(5) This mailing sheet is placed on the lesson.

2. POSTAGE REGULATIONS

Do **not** enclose letters with lessons.

Send all letters in a separate envelope.

3. POSTAGE RATES

First Class

Take your lesson to the Post Office and have it weighed. Attach sufficient postage and a green first-class sticker to the front of the envelope, and seal the envelope. Correspondence lessons will travel faster if first-class postage is used.

Try to mail each lesson as soon as it has been completed.

When you register for correspondence courses, you are expected to send lessons for correction regularly. Avoid sending more than two or three lessons in one subject at the same time.

St. Serv. 9-91

FIRST DAY

This week you will review the ideas you have read about since Lesson 25. You may use your notes to help you do the following questions. Try to do as much as you can without the help of your notes.

In Lesson 25 you read about the force of gravitation. Gravitation is the force which pulls you to Earth. Without the force of gravitation pulling you to Earth, you would float away into space.

1. (a) The stars in galaxies are held together in the universe. The planets in our solar system are held together in orbit. What force is holding all these objects together?

_____

_____

_____

(b) What is the name of the man who first suggested and proved with mathematics that gravitation is everywhere in the universe?

_____

_____

_____

2. The force of gravitation is pulling you to Earth. What is the force of gravitation pulling on?

_____

_____

_____

_____

_____

_____

_____

_____

The force of gravitation is pulling on the body's mass. Mass is all the materials that make up your body.

3. Use the ideas of gravitation and mass to explain what weight is.

4. The further an object is from Earth, the smaller the force of Earth's gravitation pulling on the object. What do you think happens to your weight when you go up in an airplane?

5. If you could get away from the force of gravitation what would your weight be?

6. A certain man on Earth has a mass of 78 kilograms. What is the weight of this man?

On Earth you know that weight is equal to mass times force of gravitation.

Weight = Mass × Force of Gravitation

On Earth the force of gravitation equals one. On the Moon the force of gravitation is 6 times less or 1/6 of the force of gravitation on Earth.

7. Would your mass be more, less or unchanged on the Moon? Why?

_____

_____

_____

_____

_____

_____

_____

8. A truck on Earth may weigh 6 tonnes. The mass of this truck on Earth is 6 tonnes. How much does the truck weigh on the Moon? Show your work in the space below.

On the Moon the truck would weigh _____ tonnes.

SEND TODAY'S WORK FOR CORRECTION

SECOND DAY

- balanced forces
- unbalanced forces
- action and reaction

These are more of the ideas you have investigated. Below, you will find an example of a balanced force, an unbalanced force and an action and reaction. Using these examples explain what is meant by balanced forces, unbalanced forces and action and reaction.

BALANCED FORCES - a football lying on the ground

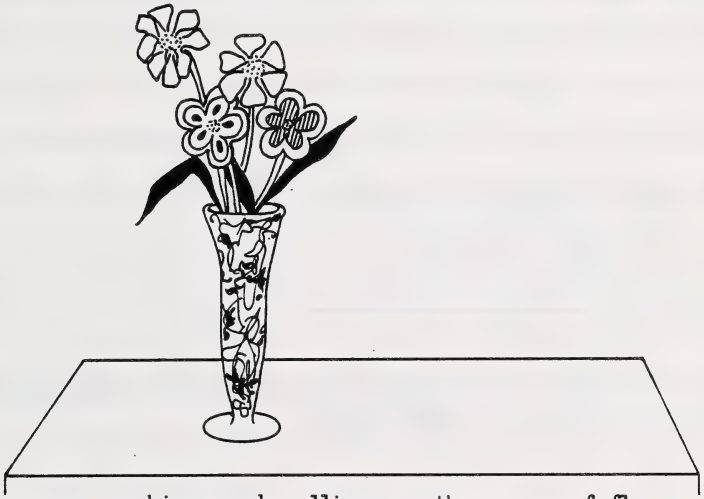
UNBALANCED FORCES - a football being kicked

ACTION AND REACTION - A hockey player slams a puck into a side board! The puck bounces back off the board.

THIRD DAY

When the forces pulling or pushing on a object are equal you say the forces are balanced. The objects will not move. Another way of saying this is that an object at rest tends to remain at rest because of its inertia. Objects tend to remain in motion because of their inertia.

Here is a vase of flowers sitting on a table.



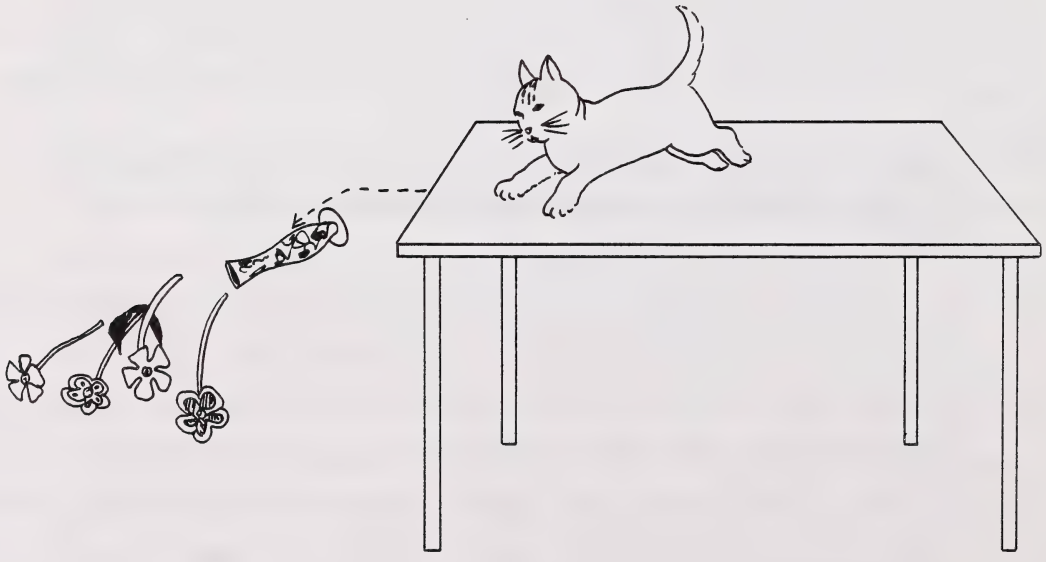
What forces are pushing and pulling on the vase of flowers?

There is a pulling and pushing force on the vase of flowers. Are the pulling and pushing forces balanced? How do you know?

Will the vase of flowers suddenly fall off the table by itself? Why or why not?

What kind of force is needed to make the vase move?

The act in the picture below provided the unbalanced force needed to make the vase move.

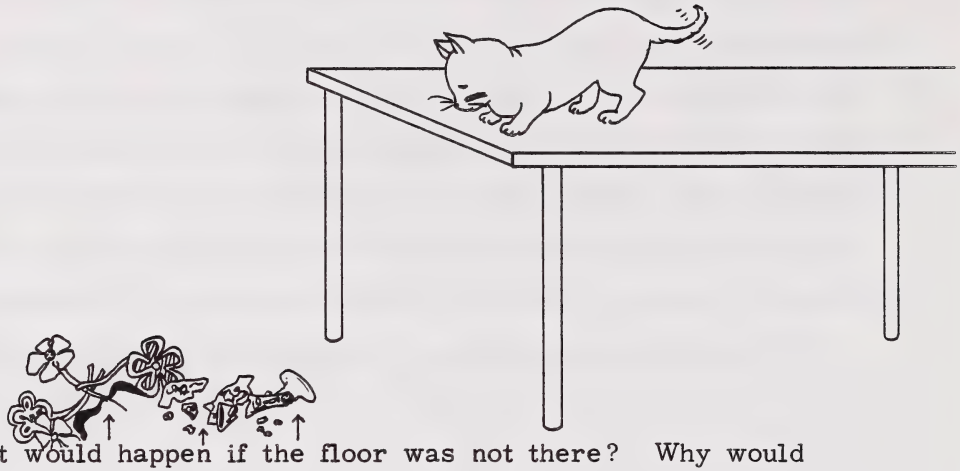


The vase started to move in a straight line, then it curved toward the floor as it fell. Why did the vase fall to the floor instead of continuing its movement in a straight line?

Will the falling vase suddenly stop falling in mid-air? Why or Why not?

The vase will continue to fall. What kind of force is needed to stop the vase from falling?

The vase hit the floor. The floor reacted by pushing upwards and stopping the falling vase. The floor, pushing upwards, provided the unbalanced force needed to stop the falling vase.



What would happen if the floor was not there? Why would this happen?

Mr. Newton might sum up this incident by stating his Law of Motion or Law of Inertia which says:

SEND TODAY'S WORK FOR CORRECTION

FOURTH DAY

Underline the correct answer in the following.

1. Earth's curving path around the Sun is called an:

   (a) orbit. (b) rotation.

2. What is the shape of Earth's orbit around the Sun?

   (a) circular (b) elliptical

3. The force which pulls all planets around the Sun is called:

   (a) thrust. (b) the force of gravitation.

4. It takes Earth 365 $\frac{1}{4}$ days to go around the Sun. This trip is called a:

   (a) rotation. (b) revolution.

5. If Earth did not revolve around the Sun there would be no:

   (a) seasons. (b) sunshine.

6. Earth is divided into a northern half and a southern half. These halves are called:

   (a) hemispheres. (b) spheroids.

7. Earth is tilted on its axis. When the northern axis is closest to the Sun, the season we have is:

   (a) summer. (b) spring.

8. When Earth's axis is in the position farthest from the Sun, we have winter in the northern hemisphere. This is because the Sun's rays on the northern hemisphere are shining:

   (a) less directly on us. (b) more directly on us.

SEND FOR CORRECTION

FIFTH DAY

Choose *one* of the following topics for a report. These reports require your imagination and understanding of the ideas in this unit.

1. Strong Man on the Moon

This report should include ideas about mass, weight and force of gravitation.

2. Earth Stops Revolving Around the Sun

Write about the forces that stopped Earth's revolution. Tell how and why seasons on Earth change.

3. No Force of Gravitation

Tell what would happen to Earth, the other planets, stars and galaxies, if there were no force of gravitation.

SEND FOR CORRECTION